

**Response to Scoping Document 1
Hells Canyon Hydroelectric Project
FERC # 1971-079**

**Payette and Wallowa-Whitman National Forests
USDA Forest Service**

INTRODUCTION

The following constitutes the USDA Forest Service comment on the Federal Energy Regulatory Commission's (FERC) Scoping Document 1 (SD1). SD1 identifies many of the resource issues affected by the Hells Canyon Hydroelectric Project (HC Project). However, the USDA Forest Service is concerned that some detail and complexity of the issues may be lost without further refinement of the issue statements. Therefore, the agency is providing additional information and clarification to many of FERC's listed issue statements, and identifies additional resource issues to be analyzed before the USDA Forest Service will be able to determine if continuing operation of the project is consistent with the management direction established in the Forests' Land and Resource Management Plans (LRMP).

These issues and concerns have been previously identified in the consultation process with Idaho Power Company (hereafter referred to as the Applicant), other parties to the relicensing process and FERC, through the USDA Forest Service response to the **Formal Consultation Package** (May 15, 1997); the **Information Needs Assessment** (November 6, 1998); the **Draft Application for New License** (January 10, 2003); and the **Request for Additional Studies** (September 19, 2003).

SD1 also lists the Applicant's proposed protection, mitigation, and enhancement (PM&E) measures. The USDA Forest Service is taking the opportunity to provide detailed comment, PM&E measure specific information and agency concerns regarding the Applicant's PM&E measures.

The USDA Forest Service also provides comment, clarification, recommendation and additional information to many SD1 sections, including an alternative to the Proposed Action.

The format for responding to information provided in SD 1: SD 1 text is in italics while USDA Forest Service comment is presented in normal text.

3.0 REQUEST FOR INFORMATION

The following is a list of the various documents and information sources used by the USDA Forest Service during the consultation process. Many of these references have been cited in previous USDA Forest Service response documents.

Sediment Resources

Vincent K.R. and E. D. Andrews. 2002. Review of Idaho Power Company technical reports as they relate to sand beaches in the Hells Canyon Reach of the Snake River. Unpublished report submitted to FERC as Appendix D (pages D 19-D 33) in the USDA Forest Service Response to IPC's Draft License Application (January 10, 2003).

O'Connor, J. 2002. Review of Idaho Power Company technical reports pertaining to the geomorphology and sediment transport in the Hells Canyon Reach of the Snake River (March 2002; FERC 1971; Technical Reports E.1-1 and E.1-2). Unpublished report submitted to FERC as Appendix D (pages D 1-D 17) in the USDA Forest Service Response to IPC's Draft License Application (January 10, 2003).

Wilcock, P.R., J.C. Schmidt, and P.E. Grams 2002. Review of Idaho Power Company Documents Concerning Sediment-Related Impacts of the Hells Canyon Complex Dams on the Snake River in Hells Canyon. Unpublished report submitted to FERC as Appendix D (pages D 35-D 74) in the USDA Forest Service Response to IPC's Draft License Application (January 10, 2003).

Grams, P.E., and Schmidt, J.C. 1999a. Sand bar and terrace erosion between 1964 and 1996 at the Tin Shed and Camp Creek cultural resource sites on the Snake River in Hells Canyon. Department of Geography and Earth Resources, Utah State University. Logan, UT. (Attached in Enclosure 2)

Grams, P.E. and Schmidt, J.C. 1999b. Sand bar erosion and deposition on the Snake River in Hells Canyon between 1990 and 1998. Department of Geography and Earth Resources, Utah State University. Logan, UT (Attached in Enclosure 2)

Grams, P.E. 1991. Degradation of alluvial sand bars along the Snake River below Hells Canyon Dam, Hells Canyon National Recreation Area, Idaho. Middlebury College. Middlebury, Vermont unpublished Senior Thesis, 98p. (Attached in Enclosure 2)

Merényi, E., W.H. Farrand, L.E. Stevens, T.S. Melis, K.Chhibber. Studying the Potential for Monitoring Colorado River Ecosystem Resources Below Glen Canyon Dam Using Low-Altitude Aviris Data. Paper in Proc. 9th AVIRIS Earth Science and Applications Workshop, February 23-25, 2000, Pasadena, CA. (Attached in Enclosure 2)

Northern Arizona University Department of Geology. 2001. Monitoring the Effects of the Spring 2000 Habitat Maintenance Flow on Colorado River Ecosystem Sand Bars. January 2001 Sand Bar Studies Fact Sheet. (Attached in Enclosure 2)

Twichell, D.C., V.A. Cross, M.J. Rudin, K.F. Parolski. 1999. Surficial Geology and Distribution of Post-Impoundment Sediment of the Western Part of Lake Mead Based on a Sidescan Sonar and High-Resolution Seismic-Reflection Survey. Based on U.S. Geological Survey Open-File Report 99-581. URL: (Attached in Enclosure 2) <http://pubs.usgs.gov/of/of99-581/index.html>

U.S. Geological Survey. Anderson, M.T., Graf, J.B., and Marzolf, G.R., 1996. Controlled flooding of the Colorado River in Grand Canyon--The rationale and data collection planned: Fact Sheet FS-089-96. (Attached in Enclosure 2)

U.S. Geological Survey, Jansen,S., J.B.Graf, J.E. Marlow, G.G. Fisk.1996. Monitoring Channel Sand Storage in the Colorado River in Grand Canyon, Fact Sheet FS-120-95. (Attached in Enclosure 2)

U.S. Geological Survey. 2002. Monitoring and Research of streamflow, sediment transport, and water quality in the Colorado River Ecosystem between Glen Canyon Dam and Lake Mead. Project AZ189. Grand Canyon Monitoring and Research Center. (Attached in Enclosure 2)

U.S. Geological Survey. 2002. Development of a management tool for predicting multidimensional and one-dimensional sand transport in the Colorado River ecosystem. Project AZ191. Grand Canyon Monitoring and Research Center. (Attached in Enclosure 2)

Fish Resources

Bennett, D. H. et. al. 2003. Substrate Composition and Emergence Success of Fall Chinook Salmon in the Snake River. Northwest Science, Vol. 77, No. 2. Pg 93-99. 2003. (Attached in Enclosure 2)

Connor, W., H.L. Burge and T. Bjornn. 2003. Influence of Flow and Temperature on Survival of Wild Subyearling Fall Chinook Salmon in the Snake River. North American Journal of Fisheries Management. 23:362 - 375. American Fisheries Society 2003. (Attached in Enclosure 2)

Connor, W., R.K. Steinhorst, and H. L. Burge. 2003. Migrational Behavior and Seaward Movement of Wild Subyearling Fall Chinook Salmon in the Snake River. North American Journal of Fisheries Management. 23:414 - 430. American Fisheries Society. 2003. (Attached in Enclosure 2)

Connor, W. and H.L. Burge. 2003 Growth of Wild Subyearling Fall Chinook Salmon in the Snake River. North American Journal of Fisheries Management. 23:594 - 599. American Fisheries Society. 2003. (Attached in Enclosure 2)

Connor W. P., et. al., Estimating the Carrying Capacity of the Snake River for Fall Chinook Salmon Redds. Northwest Science, Vol. 75, No. 4, pp. 363 – 371. 2001. (Attached in Enclosure 2)

Connor, W.P., H.L. Burge, R. Waitt, and T.C. Bjornn. 2001. Snake River Chinook Salmon Early Life History, Condition, and Growth as Affected by Dams. North American Journal of Fisheries Management, February 2001. (Attached in Enclosure 2).

Connor, W.P., H.L. Burge, R. Waite, and T.C. Bjornn. 2002. Juvenile Life History of Wild Fall Chinook Salmon in the Snake and Clearwater Rivers. North American Journal of Fisheries Management 22:703-712, 2002 American Fisheries Society 2002. (Attached in Enclosure 2).

Hunter, M.A. 1992. Hydropower Flow Fluctuations and Salmonids: A Review Of the Biological Effect, Mechanical Causes, and Options For Mitigation. State of Washington Department of Fisheries Technical Report No. 119. Olympia, Washington. (Attached in Enclosure 2).

USDA Forest Service. 1999. Review of existing studies and literature on the geomorphology, hydrology and sediment transport related to Hells Canyon, Snake River, Idaho. Department of Agriculture. Pacific Northwest Research Station. (Attached in Enclosure 2).

USDA Forest Service and USDI Bureau of Land Management Environmental Assessment, Decision Notice, and Finding of No Significant Impact for Inland Native Fish Strategy. Department of Agriculture. Intermountain, Northern, and Pacific Northwest Regions (INFISH). Submitted to FERC by USDA Forest Service in Response to Scoping Document 2, Pelton Round Butte Hydroelectric Project FERC number 2030, January 30, 2003.

USDA, Forest Service and USDI Bureau of Land Management 1995. Environmental Assessment, Decision Notice, and Finding of No Significant Impact for Managing Anadromous Fish – producing Watersheds on Federal Lands in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH). Department of Agriculture Intermountain, Northern, and Pacific Northwest Regions (PACFISH). Submitted to FERC by USDA Forest Service in Response to Scoping Document 2, Pelton Round Butte Hydroelectric Project FERC number 2030, January 30, 2003.

The following is a list of the various documents and information sources used by the USDA Forest Service during the consultation process. Many of these references have been cited in previous USDA Forest Service response documents. Copies of these documents, if determined appropriate, will be filed at a later date.

USDI Fish & Wildlife Service. 1998. Biological Opinion on the Effects of Continued Implementation of the LRMP's and RMP's, as Amended by PACFISH and INFISH, on Listed Bull Trout in Accordance with Section 7 of the ESA, 1973, as amended (16 U.S.C. 1531 et seq.).

USDA, Forest Service. 1995 Pine Creek high Priority Bull Trout Watershed. Analysis of Low, Medium and High Risk Projects Screened in August 1995 and Recommended Course of Action for Bull Trout Recovery. Wallowa-Whitman National Forest

USDA, Forest Service. 1995 Upper Eagle Creek high Priority Bull Trout Watershed. Analysis of Low, Medium and High Risk Projects Screened in August 1995 and

Recommended Course of Action for Bull Trout Recovery. Wallowa-Whitman National Forest

USDA, Forest Service. 1995 Upper North Powder River high Priority Bull Trout Watershed. Analysis of Low, Medium and High Risk Projects Screened in August 1995 and Recommended Course of Action for Bull Trout Recovery. Wallowa-Whitman National Forest

USDA, Forest Service. 1995 Upper Powder River high Priority Bull Trout Watershed. Analysis of Low, Medium and High Risk Projects Screened in August 1995 and Recommended Course of Action for Bull Trout Recovery. Wallowa-Whitman National Forest

Listed below are additional references that the USDA Forest Service is not filing at this time but that FERC may wish to consider:

Thorne,C.R, Hey, R.D, Newson, M.D. Applied Fluvial Geomorphology for River Engineering and Management. 1997 John Wiley & Sons. Chapters 5 and 6.

Knighton,D. Fluvial Forms and Processes. 1998. Oxford University Press. Chapter 4.

G.L.Morris, J.Fan. Reservoir Sedimentation Handbook. 1998 McGraw-Hill Companies Inc.

Pacific Northwest River Basin Commission. Anatomy of a River, An Evaluation of Water Requirments for the Hells Canyon Reach of the Middle Snake River. Vancouver, Washington 203 p.

USDA, Forest Service. 2001. The Built Environment Image Guide for the National Forests and Grasslands.

4.0 PROPOSED ACTIONS AND ALTERNATIVES

4.1 PROPOSED ACTION

4.1.1 Description of Project Facilities

One 19-mile-long, 69-kilovolt transmission line (Line 945) (see figure A-3, appendix A) is included in the license application. The line runs from the Oxbow switchyard to the Pine Creek substation and then to the Hells Canyon substation.

This description of the facilities should be expanded to include the other 12 transmission lines the Applicant identified in their Draft License Application (DLA) and eliminated in the Final License Application (FLA). Until the Applicant formally requests that FERC remove these transmission lines from the license and until such time the Commission determines and notices that these lines are no longer a primary transmission system for

the HC Project, and until the Applicant accepts appropriate authorization from the USDA Forest Service and other entities, these lines are part of the license and need to be analyzed as part of the license application.

Idaho Power also proposes to change its project boundary to exclude 3,800 acres of federal land surrounding the project reservoirs above an established reservoir elevation that it believes are no longer needed for project purposes.

A detailed map showing the exact locations of the 3,800 acres proposed for exclusion from the current project boundary is needed to facilitate an effects analysis. The map and text should also identify the contour elevations (7.5 min. USGS Quads) that the Applicant is proposing as the new boundary.

4.1.2 Proposed Project Operations

4.1.2.2 Oxbow Development

Issue: Limit daily reservoir-level fluctuations to 5 feet under typical operating conditions and 10 feet under atypical conditions.

The definition of atypical conditions could be interpreted to include anything that the Applicant may want to do at any time. The Applicant did not analyze the effect of this additional 5 foot drawdown on aquatic or recreation resources. The proposed change from current operations should be evaluated. The proposed change in reservoir elevation may adversely affect native and non-native fish habitats within the Hells Canyon (HC) reservoir. Analysis of this potential fluctuation on fish populations should be made before FERC agrees with the proposal. Recreation use and access may also be adversely affected by this additional fluctuation.

4.1.2.3 Hells Canyon Development

Limit daily reservoir-level fluctuations to 5 feet under typical operating conditions and 10 feet under atypical conditions.

See 4.1.2.2 above.

Eliminate load following during the fall chinook program period. From the end of fall chinook spawning through May 31, make minimum flows dependent on the most critical shallow redd.

The USDA Forest Service agrees with the concept of protecting fall chinook spawning through May 31. However the issue is more complex than egg incubation. Ramping may also adversely affect other freshwater life stages including juvenile rearing and out-migration (See the Threatened, Endangered and Sensitive [TES] section).

The tables in Appendix B need to clarify the differences between current operations and operations proposed for the new license. .

4.1.3 Proposed Protection, Mitigation, and Enhancement Measures

The USDA Forest Service will provide preliminary Federal Power Act (FPA) Section 4(e) terms and conditions (terms and conditions) and a schedule for finalization of terms and conditions, when the proposed project is noticed ready for environmental analysis. Additional information, as outlined in our Request for Additional Studies, is necessary before the USDA Forest Service can determine which terms and conditions are necessary to bring the project into compliance with the LRMPs. However, at this time the USDA Forest Service is providing additional detail on the Applicant's proposed PM&E measures to further clarify the agency position for FERC.

Water Use and Quality

1. Continue 100-cfs minimum flow in Oxbow Bypass to help maintain water quality in the bypassed reach.

The FLA states that the “*water quality conditions within the Oxbow Bypass shows that standards are not always met*”. Current operations fail to meet water quality standards for water temperature, and dissolved oxygen (DO). The USDA Forest Service questions how maintaining the status quo will result in meeting State standards in the bypass reach when it has not proven to be an effective mitigation in the past. The Applicant has not adequately addressed this issue or attempted to study and evaluate potential measures in order to meet water quality standards.

With regards to water quality in the Oxbow Bypass, the USDA Forest Service disagrees with the Applicant's position that “*IPC contends that its activity relative to evaluating ways to enhance water quality conditions has been adequate and appropriate.*” This reach is used by bull trout, redband trout, and white sturgeon. FERC should address this issue by requiring measures that will achieve State water quality standards. Improved water quality will be beneficial for native fish including Endangered Species Act (ESA) listed bull trout.

2. Continue recreation waste disposal to prevent waste from contaminating the river.

The USDA Forest Service supports the continuation of this existing PM&E measure throughout the term of the new license.

3. Continue preferential use of the upper spillgates at Brownlee dam during spill periods to minimize elevated total dissolved gas concentrations.

The FLA states spill from the upper spill gates at Brownlee Dam “*may help minimize elevated total dissolved gas (TDG) levels*”. Preferential use of the upper spillgates may not provide adequate assurance that operations will meet State TDG standards. TDG is

documented to cause adverse effects on native fish species (Meyers 2003). The Applicant should develop a TDG Management Plan outlining mitigation measures to reduce TDG below all HC Project dams, describe a monitoring plan to ensure TDG standards are met, and identify a process for improving TDG conditions if implemented. TDG measures are insufficient to meet State water quality standards.

4. Supplement dissolved oxygen (DO) into Brownlee Reservoir to improve DO conditions within the Hells Canyon Project.

5. Install and operate turbine-venting systems in Brownlee powerhouse units 1 through 4 to enhance oxygen concentrations in the waters below Hells Canyon dam.

6. Investigate, and install and operate if practical, a turbine-venting system in Brownlee powerhouse unit 5 to enhance oxygen concentrations in the waters below Hells Canyon dam.

The USDA Forest Service supports the Applicant proposals to implement actions to improve DO conditions within the HC Project. This includes the Applicant proposals to: 1) supplement DO by 1,450 tons annually into Brownlee Reservoir by injecting it into the transition zone or the upstream end of the lacustrine zone, 2) install and operate turbine-venting systems in units 1 through 4 at the Brownlee Project, and 3) inject oxygen or atmospheric air into water passing through unit 5 at the Brownlee Project.

The FLA fails to adequately address and mitigate project induced low DO conditions not covered by the draft Total Maximum Daily Load (TMDL). These conditions include 1) low DO in the hypolimnion of Brownlee Reservoir, 2) low DO in the Oxbow Bypass reach, and 3) low DO levels below HC dam.

The Applicant should develop and implement a Dissolved Oxygen Management Plan that describes how the project and its operation will meet a TMDL load allocation for DO. The DO Management Plan should outline mitigation measures to increase DO, describe a monitoring plan to ensure project induced low DO levels are mitigated, and identify a process for improving DO conditions if implemented DO measures are insufficient to meet water quality standards.

The oxygen levels within and below Brownlee Reservoir are documented to be a serious problem adversely affecting survival of native and non-native fish. Oxygen deficiency has been documented as the cause of fish kills (ODFW 2003).

7. Install Hells Canyon Dam spillway flow deflectors to reduce dissolved gas concentration in the tailrace of Hells Canyon Dam and the Snake River downstream of the dam.

The USDA Forest Service supports the Applicant's proposal to install flow deflectors on the Hells Canyon Dam spillway. However, the USDA Forest Service is concerned that the proposed PM&E measures may be inadequate to address and mitigate all project

induced TDG conditions. The Applicant should develop a TDG Management Plan outlining mitigation measures to reduce TDG below all HC Project dams, describe a monitoring plan to ensure TDG standards are met, and identify a process for improving TDG conditions if the Applicant's proposed TDG measures are insufficient to meet water quality standards.

TDG levels from Brownlee Dam to the confluence with the Salmon River are known to exceed State standards during periods of peak spill. The Applicant has provided limited information on how effective the mitigation measures will be at reducing TDG. Information documenting how these proposed measures will improve TDG levels to meet State standards is lacking.

Fish and Snails

8. Continue the fall chinook plan.

8a. Continue reservoir operations in the fall, winter, and early spring for protection of fall chinook spawning and salmon incubation.

8b. Continue fall chinook salmon redd and temperature monitoring to avoid the risk of dewatering developing salmon embryos.

The USDA Forest Service supports the continuance of these two PM&E measures. However, the fall chinook plan only provides measures to protect spawning and incubation until fry emerge. Ramping effects on newly emerged fall chinook fry and their survival to outmigration have not been adequately addressed. Information is needed that would document that fry-to-smolt survival in this reach is adequate for recovery purposes. The effect of ramping on juvenile stranding, feeding, loss of beach rearing habitat, and outmigration has been largely ignored by the Applicant (see also TES comments).

9. Continue anadromous fish mitigation at hatchery facilities.

9a. Continue to operate the Oxbow fish hatchery.

9b. Continue to operate the Rapid River fish hatchery.

9c. Continue to operate the Niagara Springs fish hatchery.

9d. Continue to operate the Pahsimeroi fish hatchery.

The USDA Forest Service supports the continuance of these four PM&E measures. The Applicant has proposed improvements to current hatchery operations. However, the impact of continued hatchery operations on wild runs of endangered salmon and steelhead need to be examined by FERC. The issue is complex and requires input from United States Fish and Wildlife Service (USFWS) and National Oceanographic and

Atmospheric Administration (NOAA). The potential for reintroduction of anadromous fish above the HC Project is closely related to the operation and production of these facilities. The explanation of how future operation of these hatcheries will be integrated in wild anadromous fish management within the Snake River needs to be analyzed in detail (see also TES comments).

10. Continue the warmwater fish plan.

10a. Continue centrarchid spawning protection.

10b. Continue warmwater fish population monitoring to detect long-term effects on fish populations.

The USDA Forest Service agrees in concept with the warmwater fish plan to the extent that it does not interfere with protection of TES and native fish species. Warmwater fish are non-native species that may compete for food and space with native fish. Entrainment of warmwater species into the Wild and Scenic Snake River is known to occur regularly (Van Winkle 2001). The Applicant has failed to provide information concerning the extent of entrainment or its impact on native species. There is a need for information concerning the impacts to native species caused by warmwater fish below Hells Canyon dam.

11. Implement native salmonid plan.

11a. Conduct pathogen survey in the Pine-Indian-Wildhorse core area to support development of a pathogen risk assessment plan.

The USDA Forest Service supports the pathogen survey. However, this survey should not be allowed to delay work to implement other parts of the native fish plan that will restore bull trout. Since the project was constructed, surplus hatchery salmon and steelhead have frequently been stocked in the reservoirs of the HC Project as well as in the Boise River. The probability of pathogen introduction by these stocking efforts should be examined and considered during FERC's analysis.

11b. Prepare Hells Canyon fish passage plan to allow for the capture of resident salmonids and other species migrating upstream and for their transfer to areas above Hells Canyon and Oxbow dams.

This is a complex issue that will require the input of both State and federal fisheries agencies. In addition, the Applicant has excluded the potential to pass native fish such as bull trout over Brownlee Dam. The passage of bull trout, an ESA listed species, needs to be added to the native fish plan. Limiting resident fish passage to Hells Canyon and Oxbow dams eliminates a large amount of habitat upstream of Brownlee Dam, including Eagle Creek, from consideration.

11c. Prepare a tributary habitat enhancement plan to encompass the Pine Creek, Indian Creek, and Wildhorse River basins and smaller tributaries to the Hells Canyon Complex reservoirs.

The plan, as presented in the FLA, provides minimal enhancement for tributaries other than Pine and Indian creeks and Wildhorse River. The plan should be expanded to include tributaries of Brownlee Reservoir as well as any tributaries that drain into the project reservoirs that historically are documented as fish habitat (Chandler 2003). The proposed funding for the mitigation work appears to be inadequate when considering the amount of work needed.

11d. Supplement marine-derived nutrients to enhance the forage base within bull trout rearing areas.

The Applicant has proposed distributing hatchery carcasses to selected bull trout streams. The Applicant does not appear to have an adequate plan for this work. Many areas where bull trout currently are found are inaccessible by road. A clear plan should be provided for the delivery of salmon carcasses or other substitutes for marine-derived nutrients to target areas. Marine-derived nutrients were once distributed into all of the streams tributary to the HC Project used by anadromous fish. The Applicant's proposal should be examined for adequacy. Other species beside bull trout would benefit by the delivery of marine-derived nutrients. Native fish-bearing streams not inhabited by bull trout should be considered in the mitigation proposal.

11e. Conduct Eagle Creek presence/absence survey to determine, with statistical probability, the presence or absence of bull trout within the Eagle Creek basin.

The USDA Forest Service agrees with this proposal. However, the USDA Forest Service maintains that this work should be tied to native fish passage over Brownlee Reservoir. If bull trout were found to still inhabit Eagle Creek this would provide a rationale for reconnecting the population to the fluvial bull trout that will be passed over Hells Canyon and Oxbow dams. This PM&E measure should include a monitoring provision for additional surveys throughout the duration of the license.

11f. Design and construct a permanent monitoring weir at Pine Creek to establish a long-term monitoring program of fluvial fish migrating upstream and downstream in the Pine Creek system.

The USDA Forest Service contends that this facility, if constructed, could also be used for research purposes in regards to the potential for reintroduction of anadromous fish above the project. Adult summer steelhead and spring chinook could be test planted in Pine Creek and the number, size, and relative health of out-migrants could be determined during trap operations. This information would be useful in determining the possibilities for other anadromous reintroductions above

Hells Canyon dam. FERC should examine the implications of this project for both resident and anadromous fish.

11g. Evaluate the feasibility of, and possibly implement, an experimental brook trout suppression program in Indian Creek.

The USDA Forest Service supports this proposal. Few if any brook trout suppression efforts have been successful. This effort if it succeeds may provide new knowledge for rehabilitating bull trout habitat.

12. Upgrade and enhance anadromous mitigation hatchery facilities at Pahsimeroi, Oxbow, Niagara Springs, and Rapid River.

12a. Make improvements to the Pahsimeroi fish hatchery to control pathogens, develop a locally adapted steelhead broodstock, and monitor and evaluate hatchery performance.

12b. Make improvements to the Oxbow fish hatchery by constructing adult holding pond and spawning facilities, expanding the fall chinook rearing program, distributing carcasses, generally upgrading the hatchery facilities, and monitoring and evaluating hatchery performance.

12c. Make improvements to the Niagara Springs fish hatchery by expanding the hatchery building, acquiring an additional smolt tanker, acquiring a fish marking unit, upgrading employee housing, and monitoring and evaluating hatchery performance.

12d. Make improvements to the Rapid River fish hatchery by constructing an adult holding pond and spawning facilities, distributing carcasses, upgrading employee housing, generally upgrading the hatchery facilities, constructing an offsite smolt acclimation/adult collection facility, and monitoring and evaluating hatchery performance.

The USDA Forest Service agrees with these proposals.

13. Implement the Snake River White Sturgeon Conservation Plan.

The White Sturgeon Plan is complex and comprehensive. It affects both Oregon and Idaho and the State fisheries agencies are not in agreement with many elements of the plan.

13a. Assess water quality-related impacts on early life stages of white sturgeon in the Swan Falls-Brownlee reach.

The USDA Forest Service supports this part of the plan.

13b. Translocate reproductive-sized white sturgeon to increase spawner abundance and population productivity.

The USDA Forest Service supports efforts to improve sturgeon populations affected by project facilities and operations. However, State game agency issues associated with the translocation of fish need to be resolved.

13c. Develop an experimental conservation aquaculture plan to maintain adequate population size and genetic variability of white sturgeon in the Swan Falls-Brownlee reach.

The USDA Forest Service supports efforts to improve sturgeon populations affected by project facilities and operations. However, the potential to genetically swamp the population with the progeny of a few females is a serious problem in hatchery sturgeon production. This part of the plan needs extensive examination by fisheries management agencies.

There is a sturgeon hatchery on the Kootenai River at Bonners Ferry, Idaho operated by the Kootenai Tribe and USFWS that may provide a source of information.

13d. Make periodic population assessments to monitor white sturgeon populations in the Swan Falls-Brownlee, Brownlee-Hells Canyon, and Hells Canyon-Lower Granite reaches of the Snake River.

The USDA Forest Service supports this proposal.

13e. Monitor genotypic frequencies of white sturgeon between Shoshone Falls and Lower Granite dams.

The USDA Forest Service supports this proposal.

14. Acquire, enhance, and manage 23,582 acres of upland and riparian habitat in the vicinity of the Hells Canyon Project reservoirs and downstream of Hells Canyon dam to mitigate for the estimated impacts of project operations on wildlife.

The USDA Forest Service commends the Applicant for its proposed PM&E measure and suggests that the acquisition of 23,582 acres to address project impacts on all land ownerships of upland and riparian habitat for mitigation of project impacts to wildlife and botanical species is a reasonable foundation. However, the USDA Forest Service maintains that the Applicant does not fully mitigate for all continuing HC Project impacts over the new license term.

The Applicant's PM&E proposal focuses on mitigation for project effects to crucial mule deer winter range adjacent to Brownlee Reservoir, low-elevation wildlife habitat in the HC Project reservoir fluctuation and shoreline zones and for 90 acres of shoreline erosion adjacent to HC Project reservoirs and the river reach downstream of HC dam. The

proposed PM&E measure provides for approximately 246 acres of mitigation to National Forest System (NFS) lands and resources, given the geographic distribution of the Applicant's proposed mitigation. USDA Forest Service maintains that the proposed PM&E measure does not adequately mitigate for continuing HC Project impacts to NFS lands and resources, specifically to crucial mule deer winter range and low-elevation riverine and tributary riparian habitat of HC reservoir, riverine riparian habitat in the river reach downstream of HC dam, and shoreline erosion to HC reservoir and the river reach downstream of HC dam.

The proposed land acquisition PM&E measure was discussed at the June 25, 2003 Dispute Resolution meeting in Boise, Idaho between the Applicant, State and federal agencies, and tribes. Group consensus suggested that the agencies and tribes caucus to generate an agency/tribes land acquisition proposal to be brought back to the Applicant for mutual discussion and consideration. No date was identified to reconvene due to the pending agency/tribal response to the DLA and FLA.

Subsequent to the June meeting, the agencies met to develop the rationale for land acquisition of upland, riparian, wetland and island habitats based on respective agency issues. The agencies have met on several occasions and have nearly finalized a listing of resource issues, proposed land acquisition acres by habitat type and the evidentiary basis for each land acquisition component.

At FERC's public SD 1 meeting on November 18, 2003 in Boise, Idaho, the Applicant's biological staff and several agencies discussed convening a joint meeting to continue the discussion of the land acquisition PM&E measure along with the agency/tribal proposal. The USDA Forest Service is coordinating the scheduling of the meeting with the Applicant.

It is important to note that the land acquisition PM&E measure discussions are preliminary and may not lead to an agreement in principle or any negotiated settlement. For this reason, the USDA Forest Service is providing the following information for FERC to review and incorporate as appropriate in its environmental analysis.

Upland Habitat

The USDA Forest Service comments to the Applicant's DLA indicated that upland habitats affected by the HC reservoir will not be available over the new license term for those species that depend on them. The Applicant's Technical Report E.3.2-31 identified upland habitats immediately adjacent to HC reservoir as crucial winter range for mule deer. The Applicant also concludes that the capability of winter range habitat in Hells Canyon increases with decreasing elevation. Therefore, the upland habitats affected by HC reservoir were most likely crucial winter range for mule deer and other big game species. For the Applicant to mitigate continuing HC Project impacts to NFS lands and resources (upland habitat), the USDA Forest Service maintains that the Applicant apply a 1:1 habitat replacement (land acquisition and/or conservation easements) ratio where upland habitats are of equal value (e.g. crucial

mule deer winter range) and a 2:1 habitat replacement (land acquisition and/or conservation easements) ratio where the upland habitats are of lesser quality (e.g. regular mule deer winter range zone).

The Applicant based its mitigation of crucial mule deer winter range for Brownlee Reservoir by synthesizing information and data in Edelman et al. (2001), Ryel et al. (2001) and Edelman (2002). Crucial winter range for Brownlee Reservoir is defined as from full pool (2,077 msl rounded to 2,100 ft for analysis) to 600 ft. above full pool (2,677 msl rounded to 2,700 ft).

However, Christensen (2001) (IPC Technical Report E.3.2-31) defined crucial mule deer winter range habitat as that part of the winter range where 90% of the individuals are located when the annual snow pack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten, and regular mule deer winter range as that part of the overall range where 90% of the individuals are located during the average five winters out of ten from the first heavy snow fall to spring green-up.

It is unclear why the Applicant only proposes to mitigate project impacts to crucial mule deer winter range adjacent to Brownlee Reservoir and to wildlife habitat in the HC Project reservoirs fluctuation zone when the Applicant concludes that the capability of winter range habitat in Hells Canyon increases with decreasing elevation. The areas adjacent to and affected by Oxbow and HC reservoirs are at lower elevations and by expert-opinion provide crucial mule deer winter range. Idaho and Oregon State wildlife habitat and population biologists maintain that the Snake River canyon is some of the most crucial winter range for mule deer (Christensen 2001).

Christensen (2001) mapped mule deer winter range in Hells Canyon using Idaho and Oregon State wildlife habitat and population biologists and on occasion, BLM and USDA Forest Service biologists. These specialists were able to provide the most updated and accurate assessment of big game use and habitat in the area. Of all the winter range throughout the study area, Idaho and Oregon wildlife biologists believe that the Snake River Canyon is some of the most crucial winter range for mule deer in their respective States.

Christensen (2001) identified 250,911 ha or 619,750 ac of mule deer winter range in the Hells Canyon sub-area (study area). According to E.3.2-31, there are 277 linear km along the Snake River in the Hells Canyon sub-area. Of that, there are 150 km or 93.5 mi along HC Project reservoirs (RM 341 head of Brownlee Reservoir to RM 247.5 HC dam), identifying that 150 km is 54% of the study area. Therefore, 54% of 619,750 acres is 334,665 acres of mule deer winter range adjacent to the HC Project. Further, using, Technical Report E.3.2-31 at page 31, crucial mule deer winter range accounts for 180,719 acres (54%) and regular mule deer winter range for 153,946 acres (46%) adjacent to the HC Project.

The USDA Forest Service highlights that the Applicant did not use Christensen (2001) data for development of mitigation for impacts to mule deer winter range due to continued HC Project operations.

Riparian Habitat and Shoreline Erosion

Riverine and tributary riparian habitats that are affected by the HC reservoir, and riverine riparian habitats impacted by the lack of sediment recruitment and daily/hourly water-level fluctuations in the river reach downstream of HC dam will not be available as functioning habitat over the new license term. The riverine and tributary riparian habitat had the potential to provide high quality habitat for riparian dependent and associated species, including terrestrial and botanical T&E species. Therefore, for the Applicant to mitigate continuing HC Project impacts to NFS lands and resources (riparian habitat), the USDA Forest Service maintains that the Applicant use a 1:1 habitat replacement (land acquisition and/or conservation easements) ratio where riverine riparian habitats are of equal high quality value and a 2:1 replacement ratio where the riverine riparian habitat are of lesser quality.

IPC Technical Report E.3.2-44 “Effects of Constructing and Operating the Hells Canyon Complex on Wildlife Habitat” identifies that adverse effects to the riparian zone of the Snake River reach downstream of HC dam are associated with a reduction in fine sediments, (partially caused by HC Project reservoirs trapping the fine sediments), and because of HC dam daily/hourly water-level fluctuations. Further, the report identifies that the resulting lack of fine and coarse sands decrease the extent of willow habitat and areas suitable for recruitment of willow seedlings and may also impact small emergent wetland communities.

In functioning riverine systems, scouring and deposition occur in concert. Historically, high spring flows not only scoured the river course but also deposited sediments needed for the establishment and maintenance of riparian communities, such as *Salix exigua*. Currently, high flows continue to scour the channel however, upstream sediments are trapped in HC Project reservoirs. Now as sediment-free water is released from HC dam, it has excess energy that is available to erode fine substrates from the bed and banks. This can result in coarsening of the bed material until a size class is reached that cannot be moved (Kondolf 1997). This coarsening of the bed decreases the availability of smaller material such as sand, silt and clay required for riparian vegetation establishment.

In a sediment hungry system, daily and hourly water fluctuations with high ramping rates continue to armor the substrate and prevent the establishment of diverse riparian communities. It is clear that this is occurring on the Snake River downstream of HC dam, as virtually no riparian vegetation is growing in this fluctuation zone. On August 20 and 21, 2003, the USDA Forest Service again documented project effects to riparian habitat establishment in the fluctuation zone. Photo documentation clearly illustrates the lack of riparian vegetation in the fluctuation zone. The fluctuation zone is defined as the shoreline between flows of 5,000 cfs and 30,000 cfs.

The Applicant maintains that enough “fine” sediment is located in the interstitial spaces between the coarser materials as well as in subsurface substrates to support the current riparian vegetation. This may be an accurate assessment as the current riparian vegetation is only located above the fluctuation zone as photographically documented by the USDA Forest Service, August 20 and 21, 2003. However, until sediment and ramping concerns are addressed, the vegetative potential of the riparian zone along the Snake River below HC dam will be limited to its present minimal condition.

The USDA Forest Service agrees with the Applicant’s conclusions regarding the documented increase in hackberry in the riparian zone. The change in land use practices over time (i.e. cessation of grazing, reduction of homesteading, ranching and mining) facilitated the expansion of facultative riparian annuals and perennials.

However, the USDA Forest Service disagrees with the Applicant’s conclusions that modeled proposed operations of the HC Project would provide slightly more riparian habitat in the river shoreline zone downstream of HC dam than would occur with full pool run-of-river operations (IPC Technical Report E.3.3-3). It is the judgment of the USDA Forest Service that had the HC_REM model used a 6-hour time step and mean daily water level, the conclusions would indicate an increase in riparian habitat for the run-of-river operational scenario. Under the run-of-river scenario it could be hypothesized that *Salix* species would develop within the vegetative barren area in the current fluctuation zone.

The USDA Forest Service disagrees with the Applicant’s conclusions regarding erosion in the river reach downstream of HC dam as identified in IPC’s Technical Report E.3.2-42 “Shoreline Erosion in Hells Canyon”. The Applicant’s study methodology did not provide for a quantitative assessment of effects due to the current project operations (i.e. flow fluctuations), nor did study assumptions include all historic erosion sites or any slump areas that could be attributable to HC Project operations. Other deficiencies include: no record of river flows (cfs) when the ocular estimates of erosion were made, the broad incremental division of slope for describing erosion areas, and the subjective assignment of disturbance types to the erosion areas. On August 20 and 21, 2003, the USDA Forest Service reviewed the Applicant’s identified erosion sites and concluded that erosion not only occurred in these sites but along the entire shoreline area in the fluctuation zone, and that the primary cause of erosion in many cases is due to daily ramping of the project.

15. Enhance habitat on four Snake River islands (Gold, Hoffman, Patch, and Porter) for waterfowl and for threatened, endangered, candidate, and special status species.

The USDA Forest Service notes the Applicant’s acquisition of four Snake River islands and their proposed PM&E measure to enhance associated habitats on these islands. However, the Applicant does not address the combined continued loss of all riverine islands in their discussion of project impacts. These islands were important refugia for

both flora and fauna species and their habitats. Blair, 2001 indicates through aerial photo analysis that numerous islands were inundated by HC reservoir. Therefore, the USDA Forest Service contends that the Applicant must mitigate for the continued loss of the island habitats affected by HC reservoir over the new license term.

16. Cooperate with state and federal wildlife management agencies to enhance low-elevation riparian habitat and reintroduce mountain quail in areas adjacent to the Hells Canyon Project reservoirs.

USDA Forest Service Region 4 lists the mountain quail as a Regional Forester Sensitive species. As such, the USDA Forest Service agrees in concept with the Applicant's proposed mitigation measure. However, the USDA Forest Service contends that the Applicant's mitigation measure is limited in temporal and management scope. The Applicant's measure should include cooperation with federal land management agencies along with state fish and wildlife agencies, and include effectiveness monitoring and an adaptive management clause for modification of mitigation pending review of monitoring results over the term of the new project license.

17. Manage wildlife resources on Applicant-owned lands associated with the Hells Canyon Project to ameliorate identified impacts and provide general land stewardship.

The USDA Forest Service agrees in concept with the Applicant regarding management of wildlife resources on applicant-owned lands. The USDA Forest Service recommends that the Applicant include within the framework of the planning team a Terrestrial Resources Work Group (TRWG). The TRWG should include biologist and ecologist representatives from the state and federal agencies.

18. Develop and implement a transmission-line operation and maintenance plan to minimize impacts to wildlife, protect wildlife resources, and enhance habitat conditions.

The FLA indicates that only 1 transmission line is associated with the HC Project: Pine Creek - Hells Canyon 69 kV line #945. This is the transmission line that runs from Oxbow to HC dam along the road on the east side of HC reservoir. This is a major change from the DLA where the Applicant indicates that there are 13 transmission lines associated with the HC Project.

To date, the Applicant has not applied for a license amendment (18 CFR 4.200) for removal of Lines: 903, 905, 907, 908, 910 & 913. Therefore, it is the USDA Forest Service opinion that the Applicant is responsible to include in the FLA all impacts that these lines have on NFS lands and resources until such time the Commission notices and approves that these lines are no longer a primary transmission system for the HC Project.

The USDA Forest Service maintains that the Applicant is responsible and must mitigate all continuing impacts associated with the transmission lines. As such, the Applicant should continue with the proposed Transmission Line O&M Plan it initiated prior to release of the DLA and incorporate all USDA Forest Service recommendations regarding

the O&M Plan (USDA Forest Service Response to the Applicant's DLA, 01.10.2003, pages 169-170).

Botanical Resources

19. Acquire, enhance, and manage upland and riparian habitat (same as measure 14) to mitigate for the estimated impacts of project operations on botanical resources.

Response to #19 is the same as response to #14 above. Additionally, the Applicant should include and consider within the proposed land acquisition and/or conservation easements, and management of those lands potential habitat for the following rare plant species: *Mirabilis macfarlanei*, *Silene spaldingii*, *Leptodactylon pungens* ssp *hazeliae*, *Mimulus clivicola*, *Pentagramma triangularis*, and the riparian related (including moist cliffs) *Bolandra oregana*, *Carex backii*, *Carex hystericina*, *Carex interior*, *Cyperus rivularis*, *Cyperus schweinitzii* *Epipactus gigantea*, *Mimulus hymenophylus*, *Mimulus patulus*, *Rubus bartonianus*, and *Teucrium canadense* var. *occidentale*. Likewise, the following communities should also be considered: Sand Dropseed communities, Giant Wildrye plant communities, wet cliff communities, river beach communities, spring and seep communities, Coyote willow communities, White Alder/mixed shrub communities, and Black Cottonwood- White Alder/mixed shrub communities.

20. Formalize cooperative relationships to accomplish noxious weed control, site monitoring, and reseedling along the Snake River corridor from Weiser downstream to the confluence of the Salmon River.

The USDA Forest Service agrees in concept with the Applicant's conclusion that continued project operations can contribute to the spread of noxious weeds along the reservoir and to the river reach downriver reaches. Within one year following the issuance of a new project license, the Licensees should develop, fund, and implement an Exotic/Invasive Vegetation Management Strategy for the prevention, suppression, and containment of exotic and/or invasive plant species, including noxious weeds. The management strategy should be developed in consultation with and subject to approval by the USDA Forest Service and other members of the TRWG and incorporated in the Applicant's Hells Canyon Resource Management Plan (HCRMP). The strategy should include an integrated weed management plan. The Idaho and Oregon Departments of Agriculture listings of noxious weeds should be used to define which species are so classified. The strategy and integrated weed management plan should be implemented for the life of the license (USDA Forest Service Response to IPC's DLA, 01.10.2003, page 170).

21. Formalize cooperative relationships to protect and monitor sensitive plant sites along the Snake River corridor from the headwaters of Brownlee reservoir downstream to the confluence of the Salmon River.

HC Project operations will continue to occupy rare and sensitive plant habitat in HC reservoir and habitats in the fluctuation zone on the river reach downstream of HC dam. The USDA Forest Service maintains that the Applicant must fully mitigate continuing HC Project operation impacts to rare and sensitive plant populations and habitat on NFS lands. The Applicant states that their participation in the cooperative projects would include one or more of the following: 1) funding, 2) management, 3) technical expertise, 4) logistical involvement, 5) in-kind support, and 6) materials. The USDA Forest Service maintains that the Applicant's participation must include all of the above elements to mitigate continuing HC Project impacts to NFS lands and resources.

Specifically, the Applicant must, within the project area, protect and improve all existing rare and sensitive plant populations, restore degraded rare and sensitive plant habitats, and where potential habitat exists reintroduce rare and sensitive plant species. Additionally, the Applicant should develop cooperative programs to:

- Develop species management guides for rare and sensitive plants impacted by HC Project operations.
- Construct exclosures around rare plant populations threatened by livestock use associated with trailing avenues provided by construction and maintenance of transmission line Right of Ways (ROW).

22. Develop and implement a transmission-line and service road operation and maintenance plan and adaptively manage operation and maintenance activities to minimize adverse impacts on botanical resources and to manage noxious weeds.

Response to #22 is the same as response to #18 above.

23. Implement cooperative projects recommended by agencies and included in the transmission-line operation and maintenance plan.

Response to #23 is the same as response to #18 above.

Historical and Archaeological Resources

The USDA Forest Service contends that the proposed PM&E measures do not identify adequate PM&E measures for affected eligible historic properties within the Area of Potential Effect (APE).

24. Monitor sites along transmission line 945 that are eligible for inclusion on the National Register.

In general, the USDA Forest Service does not agree with proposed mitigations for adverse effects to historic properties. While historic property monitoring is adequate for some properties within the APE, and could fulfill protection needs under certain circumstances, monitoring is not an acceptable mitigation for adverse effects. The Applicant's responsibility to address project effects is broader than monitoring alone.

Further, since the APE for the project is still in dispute, many of the PM&E measures cannot be adequately analyzed, as all affected historic properties have not been clearly and wholly defined.

25. Monitor the known burial site on Oxbow reservoir.

This PM&E measure does not affect NFS lands.

26. Monitor known eligible sites on Oxbow and Hells Canyon reservoirs.

Response to #26 is the same as response to #24 above.

27. Monitor known eligible sites on Brownlee reservoir.

This PM&E measure does not affect NFS lands.

28. Monitor known eligible sites below Hells Canyon dam.

Response to #28 is the same as response to #24 above.

29. Stabilize approximately 20 archaeological sites below Hells Canyon dam after identifying sites requiring stabilization.

Stabilization of “approximately” 20 currently unidentified historic properties is not acceptable to the USDA Forest Service. In order for the FERC and the Applicant to be in compliance with Section 106 of the National Historic Preservation Act, all properties located within the APE must be evaluated for eligibility to the National Register, effects to eligible properties must be determined, and PM&E measures for affected properties must be identified. In addition, stabilization is only one possible option for mitigation for adverse effects.

30. Stabilize seven archaeological sites on Brownlee reservoir.

31. Recover archaeological data at four archaeological sites on Brownlee reservoir to prevent possible damage by reservoir operations.

These PM&E measures do not affect NFS lands.

32. Establish Native American interpretive sites on Brownlee reservoir to enhance visitors’ awareness of Native American presence and land use in the project area.

33. Establish Native American interpretive sites on Oxbow and Hells Canyon reservoirs to enhance visitors’ awareness of Native American presence and land use in the project area.

34. *Establish Euro-American interpretive sites on Brownlee, Oxbow, and Hells Canyon reservoirs to enhance visitors' awareness of Euro-American presence and land use in the project area.*

35. *Establish Asian-American interpretive sites on Brownlee, Oxbow, and/or Hells Canyon reservoirs to enhance visitors' awareness of Asian-American presence and land use in the project area.*

36. *Support Euro- and Asian-American interpretive projects by assisting local community museums with collections acquisition, display, and curation related to Hells Canyon area trappers, miners, homesteaders, ranchers, and river runners of European and Asian descent.*

The USDA Forest Service agrees with these proposed enhancement measures (#32 through #36).

37. *Provide support for Native American programs of the Burns Paiute Tribe in its efforts to obtain funding for participating in and/or administering cultural resources PM&E measures, educating its youth by providing scholarship/training funds, and providing funds to facilitate several cultural enhancement programs.*

38. *Provide support for Native American programs of the Confederated Tribes of the Warm Springs Indian Reservation in its efforts to obtain funding for participating in and/or administering cultural resources PM&E measures, educating its youth by providing scholarship/ training funds, and providing funds to facilitate several cultural enhancement programs.*

39. *Provide support for Native American Programs of the Nez Perce Tribe in its efforts to obtain funding for participating in and/or administering cultural resources PM&E measures, educating its youth by providing scholarship/training funds, and providing funds to facilitate several cultural enhancement programs.*

40. *Provide support for Native American Programs of the Confederated Tribes of the Umatilla Indian Reservation in its efforts to obtain funding for participating in and/or administering cultural resources PM&E measures, educating its youth by providing scholarship/training funds, and providing funds to facilitate several cultural enhancement programs.*

41. *Provide support for Native American Programs of the Shoshone-Paiute Tribes in its efforts to obtain funding for participating in and/or administering cultural resources PM&E measures, educating its youth by providing scholarship/training funds, and providing funds to facilitate several cultural enhancement programs.*

42. *Provide support for Native American Programs of the Shoshone-Bannock Tribes in its efforts to obtain funding for participating in and/or administering cultural resources*

PM&E measures, educating its youth by providing scholarship/training funds, and providing funds to facilitate several cultural enhancement programs.

These PM&E measures (#37 through #42) do not affect NFS lands.

43. Fund additional Section 106 projects to protect sites and mitigate for any unforeseen adverse effects attributed to Hells Canyon Project operations.

The USDA Forest Service supports this proposal.

Recreational Resources

44. Continue to operate and maintain monitors to provide flow information about river flows downstream of Hells Canyon dam.

The USDA Forest Service supports continuance of this measure.

45. Continue the Memorandum of Understanding between the USFS and the Applicant with regard to staffing the Hells Canyon Visitors Center.

USDA Forest Service collected data at Hells Canyon Visitors Center indicates that the Hells Canyon Project attracts visitors to this USDA Forest Service facility. The data presented below indicate that many people are visiting the tailrace area who are solely interested in seeing and experiencing Hells Canyon scenery and the project area via the roaded access provided by the construction of Hells Canyon Dam (USDA Forest Service 2003). Sightseeing accounts for approximately 40% of the total use during this period.

Table 1. Visitor Use Data

VISITORS TO HELLS CANYON CREEK RECREATION SITE -- Primary Season Only										
Purpose of Visit	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Commercial Powerboat Passengers and Guides	6,283	7,810	7,456	7,146	4,825	5,768	6,449	6,697	5,602	7,299
Commercial Float Passengers and Guides	2,984	2,959	3,397	3,566	2,436	2,408	2,933	3,061	2,222	2,378
Private Powerboaters	305	461	276	277	113	89	139	241	365	282
Private Floaters	2,218	2,730	2,422	2,214	1,617	1,986	2,031	2,445	1,978	2,497
Sightseeing By Vehicle	14,387	15,950	17,050	19,174	18,954	13,796	15,059	13,528	13,198	14,021
Fishing From The Bank	1,410	1,737	1,748	1,217	574	483	769	1,038	1,027	1,295
Others *	76	83	96	77	37	671	1,426	1,560	1,373	1,695
TOTAL	27,663	31,730	32,445	33,671	28,556	25,201	28,806	28,570	25,765	29,467

*Other includes administrative use and passengers on jetboats who have accessed the site by launching at a location downriver and traveling upriver, etc., as well as jetbacks.

While the USDA Forest Service generally supports partnership arrangements with cooperators, the conditions of the Applicant proposed Memorandum of Understanding (MOU) allow the Applicant to terminate the agreement at any time. Also, the USDA Forest Service maintains that the Applicant does not provide or propose its commensurate level of responsibility at the visitor center at Hells Canyon Creek Visitor Center. The USDA Forest Service contends that the license should establish a term of license commitment for the Applicant and funding amounts adjusted commensurately with the level of project induced visitation at the facility.

46. Continue existing general measures for all zones.

46a. Continue litter and sanitation program.

46b. Continue public safety programs.

46c. Continue aid to local law enforcement in Adams County.

46d. Continue road maintenance.

46e. Continue operation and maintenance of Applicant-managed parks and recreation facilities.

The USDA Forest Service agrees with these existing measures (#46a through #46e) for continued recreation and safety in the HC Project. The mechanism for monitoring and implementation needs to be addressed in the Recreation Management Plan (RMP).

47. Provide additional boat moorage on Hells Canyon Project reservoirs to improve angling access.

The USDA Forest Service supports this measure but has the following specific concerns:

The PM&E measure as stated in FERC's SD 1 is different than the proposed PM&E measure provided by the Applicant in the FLA. The intent of the Applicant PM&E measure was to provide additional boat moorage on Hells Canyon Project reservoirs and was not limited to improving angling access. In order to adequately assess the effects of this PM&E measure on NFS lands, more information on scope and specific locations of work is needed.

The USDA Forest Service agrees that the Applicant should fund all reasonable cost elements for the measure but maintains that the estimated costs appear to be low. Since the Applicant now proposes to fund "all reasonable and agreed-upon elements", as opposed to the DLA proposal to "fund this measure with counties and agencies", it follows that the estimated "Applicant's portion" of the total cost should be higher in the FLA than the original estimate that was made in the DLA.

The RMP should identify what process will be used to establish the Applicant's funding responsibilities for measures included in this plan and the Recreation Adaptive Management Plan (RAMP).

48. Enhance litter and sanitation plan to improve litter cleanup and access to vault toilets at dispersed recreational sites.

The USDA Forest Service supports this measure but has the following specific concerns:

Dispersed sites that experience a recurrent need for portable toilets should be highest priority for vault toilet placement. The Forest Service maintains that vault toilets provide a better facility for users than portable toilets, as well as projecting a better image of permanence in regards to site sanitation management.

The wording of the provision suggests that portable and vault toilets would be installed in year 1 followed only by operation and maintenance of year 1 installations in subsequent years of the license term. The provision needs to be worded to make it clear that new vault toilets may be installed in future years, in locations that may not need toilets in year 1 but may need it in later years of the license period. The measure should also provide for replacement of toilet facilities over the license term.

The RAMP and RMP should describe how monitoring results and consultation with appropriate agencies will be used to decide how the Litter and Sanitation Plan will be implemented and adjusted over the license term.

The estimated costs appear to be low for all the work described. Installation of a new concrete single vault toilet costs approximately \$15,000 and a double vault is approximately \$24,000. These costs will rise with inflation during the life of the license. More explanation is needed as to what specific work will be covered by the estimated costs, and how costs over and above these estimates will be handled.

The USDA Forest Service agrees that the Applicant should fund all reasonable cost elements for the measure but maintains that the estimated costs appear to be low. Since the Applicant now proposes to fund "all reasonable and agreed-upon elements", as opposed to the DLA proposal to "fund this measure with counties and agencies", it follows that the estimated "Applicant's portion" of the total cost should be higher in the FLA than the original estimate that was made in the DLA.

The RMP should identify what process will be used to establish the Applicant's funding responsibilities for measures included in this plan and the RAMP.

49. Develop and implement an integrated Information and Education (I&E) Plan to promote protection and preservation of cultural, natural, and historical resources through education.

The USDA Forest Service supports this measure but has the following specific concerns:

The I&E plan needs to be a fully integrated effort with all resources and developed upon the foundation of the zone/node concept developed by the Resource and Aesthetic Resource Work Group (RARWG). The design standards and guidelines from the Applicant's HCRMP should be considered when developing the I&E plan. The I&E plan will be part of the RMP.

This effort needs to be coordinated by a workgroup that includes all the interested stakeholders. The Applicant informed the RARWG that these plans would be developed and approved by a stakeholder workgroup.

The USDA Forest Service agrees that the Applicant should fund all reasonable cost elements for the measure but maintains that the estimated costs appear to be low. Since the Applicant now proposes to fund "all reasonable and agreed-upon elements", as opposed to the DLA proposal to "fund this measure with counties and agencies", it follows that the estimated "Applicant's portion" of the total cost should be higher in the FLA than the original estimate that was made in the DLA.

The RMP should identify what process will be used to establish the Applicant's funding responsibilities for measures included in this plan and the RAMP.

50. Coordinate the prioritization of law enforcement resource use among appropriate law enforcement agencies to address public safety issues.

The USDA Forest Service supports this measure but has the following specific concerns:

The Law Enforcement (LE) forum group will need to coordinate with the Recreation Stakeholders Group (RSG) that will be established as part of the implementation of the RMP. The RMP will address current Law Enforcement needs while the RAMP will address mechanisms for adaptive changes regarding law enforcement for the life of the new license.

The PM&E measure description is not explicit on what the Applicant is proposing to fund. What is included in O&M costs? The USDA Forest Service maintains that the Applicant should fund costs of ongoing and future law enforcement needs such as start up and annual funding of additional law enforcement officers, cost of acquiring and implementing centralized communications, law enforcement signing needs, and acquisition and maintenance of needed equipment including patrol boats. Is the Applicant proposing to fund these elements from the proposed estimated \$15,000 yearly O&M cost of the Law Enforcement PM&E measure, or is the \$15,000 primarily for costs of coordinating the biannual meetings of the group? The USDA Forest Service maintains that the elements of ongoing and future law enforcement needs, such as those mentioned above, should be funded by the Applicant and not be constrained in any way by a \$15,000 estimated annual O&M cost.

51. Develop and implement a recreation adaptive management plan (RAMP) to identify and address the adequacy of the Applicant's Recreation Plan over the life of the new license.

The USDA Forest Service supports this measure but has the following specific concerns:

The RAMP measure does not provide enough detail to determine the effectiveness of the overall RAMP. The FLA did address some of the concerns that were raised in the USDA Forest Service response to the DLA (see modifications to E.5.4.4.1.5. and Response to Comment USFS2-232).

However, there are key elements of how the RAMP would work that are still not addressed adequately. The PM&E measure needs to explain the framework of the RAMP, the roles of the RSG, how decisions will be made, timing and amounts of funding available for future recreation in the future, etc. More details of the overall RMP are needed since it will provide guidance for current and foreseeable recreation measures. Details are also needed on how the implementation needs proposed in the RMP relate to the RAMP for future actions. A key concern is how additional "foreseeable" needs that may be identified by the RSG will be dealt with. The USDA Forest Service maintains that these foreseeable needs should be part of the individual PM&E measures in the Recreation Management Plan and not be subject to any capital cost limit related to the RAMP PM&E measure. An additional question and concern regarding the cost limit for future development is how O&M at the newly developed sites would be funded. The Applicant proposed PM&E measure provides for O&M at certain "applicant enhanced sites" and lists the 6 individual sites where it would occur. What about O&M responsibility at future developed sites?

The USDA Forest Service maintains that key elements of the RAMP (mentioned in the previous paragraph) are needed now, to define the specific roles and responsibilities of all the parties. Other elements related to effective RAMP implementation can be developed after the license issuance, by the formation of a Recreation Stakeholders group early in the new license period. This group should be established and convened within one year of license issuance. The work will be vital to effectively develop and implement the RAMP and various other recreation related plans.

USDA Forest Service comments to the DLA identified the need for the Applicant to provide annual information on seasonal occupancy levels at "parks and campgrounds in the HC Project." IPC's Response to Comment USFS 3-96 stated they could not respond to our information request unless the expectations were more clearly defined. The USDA Forest Service agrees that the information request and expectation in our comment was not clearly defined; the request was meant to apply only to the Applicant owned and operated fee parks (Woodhead, McCormick, Copperfield and Hells Canyon), and not to other non Idaho Power (IPC) campgrounds or dispersed camping areas in the HC Project. The USDA Forest Service maintains that annual reporting of actual use and occupancy levels at IPC parks is a needed component of ongoing monitoring as will be described in the RMP. IPC's Response to Comment USFS 3-96 stated "The RAMP (license

application, section E.5.4.4.1.5.) includes plans to annually report on use at parks operated by IPC.” It should be that the RMP does this, as it is a current and foreseeable action.

The PM&E measure description (E.5.4.4.1.5.) in the FLA does not appear to include plans to monitor and report annually on use at parks operated by the Applicant. Table E.5-135 (“Actions and schedule for recreation adaptive management plan”) also does not appear to include this annual monitoring of use at IPC parks. Table E.5-135, in the column titled Monitoring Format/Schedule indicates a monitoring schedule for “Fee report” of every 6 years for HC Project Developed Sites. The USDA Forest Service maintains that the PM&E measure description and Table E.5-135 fails to clearly indicate that use and occupancy levels at IPC parks will be tabulated and reported annually (rather than every 6 years) as part of a monitoring schedule that should be included in the RMP.

The USDA Forest Service notes and is in agreement with the Table E.5-135 plans for the Applicant to report traffic counter data annually and also in a comprehensive report each 6 years.

The USDA Forest Service has several concerns with the cost estimate portion of the RAMP PM&E measure:

The USDA Forest Service maintains that as no RMP has been finalized, it is impossible “to identify and address the adequacy” of it which is the stated goal of the RAMP (FLA, E.5.4.4.1.5, Pg. E.5-116). The USDA Forest Service maintains that the Recreation Management Plan needs to be finalized in collaboration with the RARWG. That Recreation Management Plan should have many components (or sub-plans), one of which would be “adaptive management”. The location of E.5.4.4.1.5 RAMP, in the document creates confusion. It should be listed after all the measures that have been agreed to and which will be part of the Recreation Management Plan. The Implementation Schedule for the Adaptive Management Plan appears to be License Issuance plus three years. Most if not all, of the PM&E measures that become part of the License will begin implementation early in the license (e.g., years 1 thru 5) and will continue as appropriate throughout the license. Items not specified in the License, but which after the recommendation from the RSG, are found “reasonable and agreed-upon” would be subject to the RAMP that proposes a capital cost limit of \$300,000 every sixth year (starting in year 9). This RAMP funding is additional to what is covered by specific items that are part of the license. The USDA Forest Service requests to see the basis of the decision to offer \$300,000 every 6 years to cover future needs.

The estimated O&M cost to implement the RAMP monitoring efforts is proposed to be \$450,000 every sixth year. The Applicant has years of experience conducting recreation surveys in the HC Project and is likely well qualified to determine a reasonable estimate of future monitoring costs. However, it seems out of proportion to propose to spend 33% more on monitoring efforts than on the needed capital developments themselves. The USDA Forest Service maintains that the capital cost limit is far too low and the cost limit should either be removed to allow whatever capital spending is actually deemed to be

needed based on the RAMP, or specify a cost limit later, after the RAMP is developed and a better estimate of actual future needs can be made.

Additional questions and concerns regarding the cost limit for development are how O&M at the newly developed sites would be funded, and also how the development costs incurred under the RAMP PM&E measure relates to additional fund needs that may be identified in several other PM&E measures. For example, the Law Enforcement Program PM&E measure (E.5.4.4.1.4.) proposes to fund O&M costs associated with that Program at an estimated \$15,000 per year. If the Law Enforcement coordinating group identifies needs that exceed the \$15,000 annual estimate, the USDA Forest Service maintains that the additional fund needs should be paid by the Applicant as part of the LE Program PM&E measure, not as part of the proposed \$300,000 RAMP cost limit. The LE group and PM&E measure is separate and distinct from the RAMP group and PM&E measure.

The USDA Forest Service maintains that the Applicant should fund “all reasonable and agreed-upon” costs as part of that particular PM&E, and future actual costs that are over the stated PM&E measure estimates should not be debited from any RAMP PM&E measure cost limit. This concern would be best addressed if there was either no cost limit imposed on capital development, or if the cost limit was large enough to accommodate the full range of potential needs that may be identified in related measures such as the Law Enforcement Program.

52. Enhance road maintenance to improve public safety and further protect at-risk cultural and natural resources.

The USDA Forest Service supports this PM&E measure but maintains the proposal should include development of a comprehensive road management strategy that is incorporated into the Applicant’s HCRMP. The Plan should address necessary road design, construction and signing standards as well as travel and access management considerations, including seasonal or year round road access, closure needs, and future roading needs. The strategy should address the need to maintain and manage existing public access to reservoir dispersed sites to protect resources. The strategy should also include two track access routes.

53. Perform operation and maintenance at Applicant-enhanced BLM and USFS reservoir-related recreation sites to benefit recreation, provide public access, enhance visitor services and user satisfaction, and reduce the responsibilities of federal agencies to provide operations and maintenance (O&M) services.

The USDA Forest Service supports this PM&E measure.

54. Enhance Eagle Bar dispersed recreation site and improve boat ramp access to Hells Canyon reservoir.

The USDA Forest Service supports this PM&E measure but has the following specific concerns:

The USDA Forest Service agrees that the Applicant should fund all reasonable cost elements for the measure but maintains that the estimated costs appear to be low. Since the Applicant now proposes to fund “all reasonable and agreed-upon elements”, as opposed to the DLA proposal to “fund this measure with counties and agencies”, it follows that the estimated “Applicant’s portion” of the total cost should be higher in the FLA than the original estimate that was made in the DLA. The Applicant has agreed to be responsible for O&M costs associated with all enhancement measures (see PM&E measure #53).

The RMP should identify what process will be used to establish the Applicant’s funding responsibilities for measures included in this plan and the RAMP.

The USDA Forest Service maintains that all associated costs for environmental compliance are the responsibility of the Applicant.

55. Develop site plan for Big Bar recreation site to accommodate recreational use and provide cultural and natural resource protection.

The USDA Forest Service supports this PM&E measure but maintains that the Applicant will need to work in cooperation with the USDA Forest Service to develop a site plan. The site plan should be detailed and specific in addressing near term PM&E measure elements at Big Bar sections D and C, along with a more general schematic plan for anticipated longer term needs at Big Bar sections A, B, C and D

A PM&E measure for development at Big Bar D has been included in FLA section E.5.4.4.2.3. The USDA Forest Service maintains that limited development at Big Bar C is also needed within the first decade of the license period based on recreation use and management objectives. As discussed in the RARWG, the specific development needs at Big Bar C include a USDA Forest Service style campground facility with 15 to 20 universal campsites, potable water, landscaping, and access road improvement.

Implementation of site plan elements needed within the first decade of the license period should be specific PM&E measures accomplished outside of the RAMP process. This includes the identified needs at Big Bar D and C. Longer-term needs identified in the site plan would be subject to the RAMP process and consultation with appropriate agencies.

The cost of developing and implementation of the site plan and associated O&M costs should be the Applicant’s responsibility due to the direct linkage of the use of this site with HC Project operations.

The USDA Forest Service maintains that all associated costs for environmental compliance are the responsibility of the Applicant.

56. Enhance boat ramp and associated facilities at Big Bar Section D recreational site to improve access to lower Hells Canyon reservoir and provide cultural and natural resource protection.

The USDA Forest Service supports the proposed PM&E measure to provide these amenities at Big Bar D. The Applicant has agreed to be responsible for O&M costs associated with all enhancement measures (see PM&E measure #53).

The USDA Forest Service agrees that the Applicant should fund all reasonable cost elements for the measure but maintains that the estimated costs appear to be low. Since the Applicant now proposes to fund “all reasonable and agreed-upon elements”, as opposed to the DLA proposal to “fund this measure with counties and agencies”, it follows that the estimated “Applicant’s portion” of the total cost should be higher in the FLA than the original estimate that was made in the DLA.

The RMP should identify what process will be used to establish the Applicant’s funding responsibilities for measures included in this plan and in the RAMP.

The USDA Forest Service maintains that all associated costs for environmental compliance are the responsibility of the Applicant.

57. Develop site plan and enhance Eckels Creek dispersed recreation site to benefit recreation and provide cultural and natural resource protection.

The USDA Forest Service supports this proposed PM&E measure. Improvements at the Eckels Creek site should include protecting the cultural resource, and should emphasize retention of the existing shade trees and maintenance of the secluded nature of the site.

The USDA Forest Service agrees that the Applicant should fund all reasonable cost elements for the measure but maintains that the estimated costs appear to be low. Since the Applicant now proposes to fund “all reasonable and agreed-upon elements”, as opposed to the DLA proposal to “fund this measure with counties and agencies”, it follows that the estimated “Applicant’s portion” of the total cost should be higher in the FLA than the original estimate that was made in the DLA. The Applicant has agreed to be responsible for O&M costs associated with all enhancement measures (see PM&E measure 53).

The RMP should identify what process will be used to establish the Applicant’s funding responsibilities for measures included in this plan and in the RAMP.

The USDA Forest Service maintains that all cost associated with environmental compliance are the responsibility of the Applicant.

58. Supplement the existing O&M budget to accommodate enhancements at Applicant-managed parks and recreational facilities.

59. *Develop and implement a site plan for the Copper Creek dispersed recreation site to benefit recreation and provide cultural and natural resource protection.*
60. *Reconstruct Hells Canyon Park to benefit recreation, improve public access, and protect cultural and natural resources.*
61. *Develop Airstrip A&B dispersed recreational site to benefit recreation, improve public access, and protect cultural and natural resources.*
62. *Develop and implement a site plan for Bob Creek Section A dispersed recreational site to benefit recreation, improve public access, and protect cultural and natural resources.*
63. *Develop and implement a site plan for Bob Creek Section B dispersed recreational site to benefit recreation, improve public access, and protect cultural and natural resources.*
64. *Develop and implement a site plan for Bob Creek Section C dispersed recreational site to benefit recreation, improve public access, and protect cultural and natural resources.*
65. *Develop and implement a site plan for Westfall dispersed recreational site to benefit recreation, improve public access, and protect cultural and natural resources.*
66. *Enhance Copperfield boat launch area to benefit day-use activities.*
67. *Implement a site plan for Oxbow boat launch to benefit recreation, improve public access, and protect cultural and natural resources.*
68. *Implement a site plan for Carters Landing and Old Carters Landing recreational sites to benefit recreation, improve public access, and protect cultural and natural resources.*
69. *Reconstruct McCormick Park to meet current standards of services, benefit recreation, improve public access, and protect cultural and natural resources.*
70. *Develop and implement a site plan for Hewitt and Holcomb Parks to accommodate recreational use and provide cultural and natural resource protection.*
71. *Develop and implement a site plan for a low-water boat launch at or near Swedes Landing to improve boat access to Brownlee reservoir during seasonal reservoir drawdowns and periods of low reservoir levels.*
72. *Develop and implement a site plan for Swedes Landing to benefit recreation, improve public access, and protect cultural and natural resources.*

73. Develop and implement a site plan for Spring recreational site to enhance recreational facilities and improve boat ramp access to Brownlee reservoir.

These PM&E measures (#58 through #73) do not affect NFS lands.

Land Management and Aesthetics

74. Implement the Hells Canyon Resource Management Plan, creating virtual buffer zones between some otherwise incompatible uses, to establish or maintain compatibility between and among the various land and water uses in the vicinity of the Hells Canyon Project.

It is unclear what the Applicant means by “virtual buffer zones”. Clarification is needed before comments can be provided.

75. Incorporate aesthetic concerns when upgrading or repairing the existing transmission line 945.

Aesthetic concerns would include design and materials selection when upgrading or repairing existing transmission lines.

76. Develop standards and guidelines for designing new physical structures and modifying existing structures to achieve aesthetic and other goals.

77. Establish standards and guidelines for the design of vegetation and hardscape elements and structures in developed areas to control noxious weeds and to achieve aesthetic and other goals.

The goal of the Scenery Management System and the Built Environment Image Guide (BEIG) is to develop needed and appropriate facilities that have an architectural style that is derived from the culture, heritage, and geography of the area, and that compliment the surrounding landscape. The development of standards and guidelines needs to be done in full cooperation with the USDA Forest Service, other agencies and stakeholders, utilizing the principles described in the BEIG.

78. Implement a general aesthetic clean-up plan to enhance the quality of the recreational experience in specific areas.

The USDA Forest Service supports this PM&E measure.

79. Replace guardrails and Jersey barriers with barriers of corten steel or other visually acceptable material, except where Jersey barriers function as barriers to slides and falling rocks along roads and developed areas.

Jersey barriers that function as barriers to slides and falling rocks need to be placed and marked in accordance with the Manual of Uniform Traffic Control Devices (MUTCD)

standards. These barriers can be stained with a concrete stain that will reduce visual contrast. Placement and markings will maintain safety.

80. Reduce the visual contrast of certain project facilities with their environment to improve aesthetics and enhance the recreational experience near those facilities.

The goal of the Scenery Management System and the Built Environment Image Guide (BEIG) is to develop needed and appropriate facilities that have an architectural style that is derived from the culture, heritage, and geography of the area, and that compliment the surrounding landscape. The development of standards and guidelines needs to be done in full cooperation with the USDA Forest Service, other agencies and stakeholders, utilizing the principles described in the BEIG.

81. Cooperate with the BLM and USFS to develop and assist them with implementing proposed design standards and guidelines at specific BLM and USFS facilities, including the Spring recreational site on Brownlee reservoir (BLM), Copper Creek trailhead on Hells Canyon reservoir (BLM), and Big Bar and Eagle Bar on Hells Canyon reservoir (USFS).

The USDA Forest Service agrees that the Applicant should cooperate and assist these agencies in the development of these design standards and guidelines. This PM&E measure only addresses the development of these standards and not the implementation of the specific site elements. The implementation for these specific sites are covered in other PM&E measures listed in the recreation portion.

82. Provide signs and/or facilities that interpret some elements of the Hells Canyon Project that cannot be effectively modified to reduce their visual contrast.

Interpretation for the purpose of justifying elements of the project that are visually obtrusive is a poor means of addressing the issue. It is important to determine the infeasibility of addressing the visual contrast, and if that is actually the case, then the interpretive signs and/or facilities need to provide additional information than that regarding the visual contrast.

83. Implement the Common Policies of the Hells Canyon Resource Management Plan to provide for the management, protection, and/or conservation of natural and cultural resources.

Implementation of the HCRMP needs to include the six identified zones defined by the RARWG. These zones and subsequent classifications of sites are critical to the recreational and aesthetic experience in the project area. The following “common policies” need to consider aesthetics.

6.3.5.4. A plan for fencing of lands to eliminate open-range livestock grazing from sensitive resource areas should be developed and implemented (FLA). Aesthetics should

be taken into consideration in this fencing plan. In areas where scenic integrity objectives are high, other mitigation measures should be considered.

6.3.7.2. Improvement of roads. HCRMP, Common Policies (FLA)

E.5.4.4.1.6 Enhancement of Road Maintenance (FLA). (FERC PM&E #52)

There seems to be some conflict between Common Policy 6.3.7.2 and E.5.4.4.1.6. The common policies document says that road improvements should be minimized while the Enhancement of Road Maintenance PM&E measure proposed to develop a road management plan that would use best management practices for road maintenance. Improvement and maintenance need to be defined. A road management plan is crucial to land management and aesthetics as well as recreation and other habitat resources. This road management plan should include and address all vehicular access rather than just existing roads. Dispersed campsites are accessed by vehicle although there is no “road” to the site. These “spur” or two track access routes need to be addressed in the common policies portion of the HCRMP, as well as in the Road Management Plan. This Plan needs to be integrated with the six social zones identified by the RARWG.

Sediment

No PM&E measures were proposed to mitigate the continued diminishment of beaches (sand, silt and clay), terraces, aquatic habitats (juvenile rearing and adult spawning) and riparian vegetative communities in the Wild and Scenic Snake River corridor downstream of the HC Project. PM&E measures are included for stabilization of some site-specific archeological sites and a minimal amount of soil erosion however, these do not address many other important sediment related issues.

River Recreation

There are no proposed PM&E measures that address projects impacts to the following down-stream river resources:

1. Sediment Movements and Sandbar Recruitment
2. Flow Regimes for Navigation and River Recreation Satisfaction
3. Visitors Use and Impacts at Hells Canyon Creek Launch and Visitor Center.

4.1.4 Additional Study Requests

On September 17, 2003, the USDA Forest Service Additional Study Request (ASR) and Additional Information Request (AIR) was filed with FERC. The study request included the following studies and information:

Additional Study Requests

1. Baseline Operational Scenario
2. Integrated Resources Operations Scenario

3. Effects of Project Ramping on Resources Below the HC Project
4. Integrated Resources – Sediment Budget
5. Water Quality
6. Anadromous Fish

Additional Information Requests

1. Snake River Sandbar Aerial Photo Interpretation
2. Recreation Adaptive Management Plan

For additional information, please refer to Enclosure I of the above referenced filing.

4.2 ALTERNATIVES TO THE PROPOSED ACTION

During the collaborative phases of the HC Project relicensing process, parties identified several operational scenarios that warrant consideration by FERC in the draft environmental impact statement (DEIS). The USDA Forest Service recommends the Baseline Operational Scenario and the Integrated Resources Operations Scenario (USDA Forest Service Response to ASR, September 2003) should be considered in the FERC DEIS. As noted below, consideration of key aspects of the Baseline Operational Scenario are necessary for FERC to establish the baseline in the No Action Alternative. USDA Forest Service would be willing to work with Commission staff and other stakeholders to develop the Integrated Resource Operations Scenario.

4.3 NO-ACTION ALTERNATIVE

As noted in the USDA Forest Service ASR and in this filing, the FLA does not provide sufficient information for FERC to display the effects of current operations that are necessary to establish the No Action Alternative. Deficiencies include daily and hourly ramping rates, water quality, and flow augmentation.

5.0 CUMULATIVE ENVIRONMENTAL ISSUES

5.1 CUMULATIVE EFFECTS

The Cumulative Effects analysis section for Sediment from the Mid-Snake Projects Environmental Impact Statement (EIS) is not adequate for the HC Project EIS. The importance of the resources below Hells Canyon Dam requires a more complete description of the effects of upriver projects owned by the Applicant and others, on the supply of sediment and the peak flows that affect transport and deposition of sands and gravels in Hells Canyon.

In the FLA, the Applicant states that one reason the sediment regime in Hells Canyon has changed is because 87% of the drainage area upstream is controlled by dams. Technical Report E.1-2, Table 2.1, and Appendix B lists the storage capacity and sediment yield associated with upstream projects. Information on the Snake River above Brownlee

Reservoir was also compiled by Bureau of Reclamation during their Snake River Resources Review of the late 1990s. This information should be used in a cumulative effects analysis.

Currently the transport of sediment entering the Snake River between Brownlee Reservoir and Swan Falls (the next dam upstream) is strongly influenced by the flow regime of Swan Falls. A complete analysis of sediment and flow regimes below Swan Falls Dam at this time would be useful for both the HC Project and Swan Falls relicensing. This is referred to in Technical Report E.1-2 page 4-14, FLA: *“Tributary and mainstem dams have reduced peak flows and decreased the volume of sediment transported downstream past Weiser. Channel islands of the Snake River between Swan Falls and Farewell Bend have increased in areal extent by an average of 8% since 1938 (Johnson and Dixon 1997). This aggradation is “inferred to be a reaction to the conditions of regulated streamflow” (Osterkamp 1997). Johnson and Dixon (1997) concluded that “the increasing size and headward expansion of the islands suggest that either flow during the past half of the century has become insufficient to move sediment from shallow areas of the channel and/or that sediment supply has increased such that it exceeds the power of the stream to transport it.”*

It is important to note that the aggradation in the reach upstream from the HCC is believed to be a result of both upstream regulation projects and the relatively low gradient.” (TR-E.1-2 p.4-14)

Concerning the actual wording of the mid-Snake analysis, a suggested revision to the existing wording in section 5.2.1 and 5.2.2 follows, and is underlined. The addition of the information described above should also be added to Section 5.2.3, Cumulative Impacts.

5.2 Sediment Transport

5.2.1 Factors Contributing to Current Conditions

Construction of dams in the Snake River Basin significantly modified the sediment and flow regime of the river. The term “sediment” refers to material in size classes from clay up through cobbles.

Sediment supply to the mainstem river is influenced largely by geology, upstream land management practices related to agriculture, grazing, and the forest industry; water diversion projects, and hydropower dams.

In the mainstem river the rate and pattern of movement of sediment downstream is influenced by the flow regime which is largely controlled by dams and diversions. The transport, deposition and erosion of sediment within the mainstem channel is influenced by the flow regime of water released from hydropower dams as they control the magnitude, frequency, duration, timing and rate of change of flows. Available

information (section 3.4.2) suggests that the larger dams throughout the Snake River Basin act as sediment traps (Blair et al., 2000).

Material that would continue to be transported downstream under natural conditions is deposited in reservoirs under reservoir-influenced conditions. Water released from Hells Canyon dam typically has less suspended solids than water entering Brownlee reservoir.

Because sediment that settles in reservoirs is primarily silt, sand and gravel, it is not available for deposition downstream. This can influence the availability of gravel necessary for the formation of spawning areas, and beaches used for recreation, riparian habitat, and aquatic habitat.

5.2.2 Reasonably Foreseeable Conditions

Major changes in the conditions influencing supply, transport or deposition are not anticipated at projects located on the mid-Snake River upstream of the Hells Canyon Complex. However, Swan Falls Dam, the next dam upstream from Brownlee, is scheduled to be relicensed in 2008. Due to its proximity to HCC, Swan Falls is the most influential of the upstream reservoirs. Development of PM&E measures to reduce it's contribution to cumulative effects in the basin may occur during the relicensing process.

Operational changes or project modifications may be required at the Hells Canyon Project during relicensing and may effect changes to sediment supply, transport and erosion control. The Applicant is currently investigating basin-wide sediment issues as part of a sediment transport study at the Hells Canyon Project (Idaho Power, 1997b). The desired future resource goal for the study is "to limit, as much as is practical, sediment related impacts on sand bars, beaches, and aquatic habitat that result from the [Hells Canyon Project] and its operations."

5.2.3 Cumulative Impacts

The existing wording in this paragraph is not particularly relevant to the HC Project. References to the operational mode of upstream projects could be included in the previous section. The actual effects described should be to the Hells Canyon area of project influence.

5.2 GEOGRAPHIC SCOPE

The Geographic Scope as written in 5.2 of SD1 is adequate for sediment. However, this wording is contradicted by the existing wording in Cumulative Impacts section 5.2.2 which refers to the Applicant's sediment study extending downstream only to the Salmon River.

Along the river, the small-scale geographical scope of concern is “Lower terraces and river bars (3 to 5 m [10 to 15 ft] above the current channel) that parallel the river banks”. (TRE.1-2 p.1-14) states that these areas “*may have been formed by natural flows prior to basin regulation (more than 100 years ago)*”, as opposed to large valley forming events, therefore it is assumed that changes to flows under operational scenarios could have effects on these areas.

The USDA Forest Service contends that the geographic scope for historic properties should be defined as encompassing the Snake River from Milner dam (RM 639) to the upstream limit of Lower Granite reservoir (RM 151), a river segment generally referred to as the Idaho Power reach. This geographic scope provides for a revised definition of the Area of Potential Effect from project operations on historic properties. This geographic scope will enable the FERC to properly determine the full effects of project operations, including sediment loss, ramping, and effects from changed recreation opportunities.

6.0 PROJECT SPECIFIC RESOURCE ISSUES

Geology and Soils

FERC Issue: The effects of trapping sand and gravel within the reservoirs of Idaho Power’s Snake River projects (including Shoshone Falls, Upper Salmon Falls, Lower Salmon Falls, Bliss, C.J. Strike, Swan Falls, and the Hells Canyon Project) on erosion of beaches and terraces downstream of Hells Canyon dam.

The USDA Forest Service suggests the wording of this issue be changed as follows (changes are underlined): The effects of trapping sand and gravel within the reservoirs of Idaho Power’s Snake River projects (including Shoshone Falls, Upper Salmon Falls, Lower Salmon Falls, Bliss, C.J. Strike, Swan Falls, and the Hells Canyon Project) on the rates of deposition and erosion of sand beaches and terraces downstream of Hells Canyon dam.

FERC Issue: The effects of trapping gravel and cobble within the reservoirs of Idaho Power’s Snake River projects on the availability of substrate suitable for fall chinook spawning downstream of Hells Canyon dam.

USDA Forest Service agrees with the FERC issues as proposed. However, additional studies need to be conducted (USDA Forest Service ASR 2003).

FERC Issue: The effects of flow fluctuations caused by project operations on the erosion of beaches and terraces downstream of Hells Canyon dam.

The USDA Forest Service suggests the wording of this issue be changed as follows (changes are underlined): The effects of flow fluctuations caused by project operations on the erosion and transport of spawning gravels from the riverbed, and sand from the beaches and terraces downstream of Hells Canyon dam.

This issue needs to include the effects of flow fluctuations on 1) the deposition, mobilization and transport of gravels, and 2) deposition and erosion (both mobilization, and transport) of sands from the river bottom at 30,000cfs, and 3) terraces above 30,000 cfs. Different erosion mechanisms take place for different types of beach deposits. Beaches should be categorized according to their depositional characteristics (i.e. eddy or lateral deposition), and the number and acres of each type should be analyzed. The Applicant's proposed ramping rate of 1 ft/hour should be considered in the analysis. The analysis should consider appropriate modes and characteristics of bank failure for beaches and terraces, depending on their category.

USDA Forest Service Geology and Soils Issues Not Identified

The FERC DEIS should address:

- 1 Analysis of the effects on sand deposition below Hells Canyon dam (HCD) of reduced frequency of flows between 30,000cfs and 50,000 cfs due to water storage in Brownlee Reservoir. Based on information in FLA Figures B3 and B4, flows between 30,000 and 50,000 cfs below HCD are less frequent than inflows of that level in the Snake River at Weiser. This is probably due to water storage in Brownlee Reservoir. Flows at this level are important for potentially moving sand, if available, to upper levels of the beaches below HCD. An analysis is needed of the return frequency of these levels of flow under current operations relative to the proposed action and the effects on sand beach deposition be assessed for both operational regimes.

Water Quality and Quantity

FERC Issue: *The effects of Idaho Power's Snake River projects on seasonal water temperatures downstream of Hells Canyon dam.*

The USDA Forest Service agrees with the FERC issue as proposed. However, the issue should be expanded to address how the project and its operations continue to shift the thermal regime in the Snake River downstream of the HC Project by delaying fall cooling and spring warming. The FLA fails to address the thermal shift or adequately demonstrate that no impairment occurs as a result of the shift.

FERC Issue: *The effect of project spills on gas supersaturation and the effectiveness of gas abatement measures proposed by Idaho Power, including the preferential use of upper spill gates at Brownlee dam and the installation of spillway flow deflectors at Hells Canyon dam.*

This issue should be restated to include a statement that the project under continued or proposed operations may not meet State TDG water quality standards. The second part of the issue statement refers to a proposed PM&E measure by Idaho Power. If this is included in the issue statement then the issue statement should be expanded to address that the FLA proposal for "the preferential use of upper spill gates at Brownlee dam and

the installation of spillway flow deflectors at Hells Canyon dam” does not provide adequate assurance that operations will meet State TDG standards.

FERC Issue: The effects of Brownlee reservoir on water quality (especially DO, temperature, and nutrients) and of measures proposed by Idaho Power to improve DO concentrations, including aeration of Brownlee reservoir and turbine venting at Brownlee powerhouse units 1 through 5.

This issue should be restated to include a statement that the project and its continued and proposed operations may not meet State water quality standards for (but not limited to) DO, temperature, and nutrients. The second part of the issue statement refers to proposed PM&E measures by Idaho Power. If this is included in the issue statement then the issue statement should be expanded to address that the FLA proposal for “aeration of Brownlee reservoir and turbine venting at Brownlee powerhouse units 1 through 5” does not provide adequate assurance that operations will meet State DO standards.

FERC Issue: The effect of flow diversion and Idaho Power’s proposed 100-cfs minimum flow on water quality in the Oxbow bypass.

This issue statement should be restated to include that the project and its operation does not meet State water quality standards within the Oxbow Bypass reach.

FERC Issue: The cumulative effect of the Snake River-Hells Canyon total maximum daily load (TMDL) on overall water quality in the Snake River and the effect on specific pollutants of concern listed in the TMDL, including those load allocations assigned to Idaho Power.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effect of potential measures on the level of flood control protection in the Columbia River Basin currently provided by Brownlee reservoir.

This issue should be expanded to address not only the current Columbia River Basin flood control objectives for Lewiston and Portland, but also the need to address damaging sediment deprived peak flows to the resources within the Hells Canyon reach.

FERC Issue: The effect of potential measures on river navigation in the Lewiston to Hells Canyon dam reach of the Snake River.

The water quantity issue regarding navigation in the Lewiston to Hells Canyon Dam reach should not only address minimum flows for navigation but also minimum flows and ramping rates and their effects on aquatic, riparian, and recreational resources under various navigation flow regimes.

USDA Forest Service Water Quality and Quantity Issues Not Identified

The FERC DEIS should address:

1. The water quality issue of methyl-mercury production as a result of the processing of inorganic mercury in the HC Project due to anoxic conditions. Idaho Department of Environmental Quality (IDEQ), 16 December 2002, page 5) and Oregon Department of Environmental Quality (ODEQ, 6 January 2003 page 13-14) have stated that they will be addressing the methyl-mercury reduction during the relicensing process and it may be included in the 401 Certificate.
2. The issue that current Army Corps of Engineers flood control objectives for Lewiston and Portland do not address the damaging sediment deprived peak flows to the resources within the Hells Canyon reach.

Aquatic Resources

FERC Issue: The feasibility of restoring runs of anadromous fish, with or without hatchery supplementation, to areas upstream of the project.

The USDA Forest Service maintains that additional analysis of the potential for restoring runs of anadromous fish within and above the HC Project is needed. FERC needs to critically assess the adequacy of the Applicant's upstream habitat data and fish passage feasibility analysis. FERC should also analyze the potential to use hatchery fish to start and/or supplement reintroduced runs.

FERC Issue: The effect of Idaho Power's mitigation hatcheries, including proposed improvements, on recreational and tribal fisheries in the Snake and Columbia rivers.

USDA Forest Service contends that hatchery production has not met mitigation requirements of the Lower Snake River Comprehensive Plan 1980 Settlement Agreement (Agreement). FERC should analyze the hatchery return data to determine whether the intent of the Agreement is being met and what if any improvements are needed. The intent of the agreement was to mitigate for the loss of Snake River anadromous fish and it is important to portray how well this mitigation is being accomplished. Currently, the data from the various fisheries is difficult to obtain in a timely manner.

FERC Issue: The effects of low DO and gas supersaturation on aquatic resources in the project reservoirs and in the Snake River downstream of Hells Canyon Dam.

USDA Forest Service agrees that the effects of low DO and high TDG on aquatic biota downstream of the project needs to be extensively analyzed. Current water quality characteristics need to be correlated to presence, vulnerability and timing of various life history stages of species exposed to low DO and high TDG. Modeling of potential mortality rates on fish species should be included in the analysis. The projected length of exposure to levels of DO and TDG outside of state standards should be evaluated based on a range of flow years. The purpose of the analysis is to ensure that the ESA listed and sensitive species using the area affected by the project are adequately protected.

FERC Issue: The effects of flow fluctuations caused by load following operations on aquatic resources in the Snake River downstream of Hells Canyon Dam, and the potential benefits of reducing ramping rates or increasing minimum flows.

USDA Forest Service agrees that these flow issues must be addressed. The following information was developed to demonstrate the need for a complete analysis of ramping effects on anadromous fish below Hells Canyon Dam. It is recommended that FERC use this review of potential impacts caused by ramping to develop a full analysis of the impact on ESA listed and other native species.

Ramping Effects to Fishery Resources

Hunter (1992) summarized relevant data on the issue and described the major impacts of hydroproject ramping on aquatic biota. Typically, major ramping-related impacts on fish include: increases in flow, stranding, juvenile emigration, increased predation, impacts to aquatic macroinvertebrates, redd dewatering and spawning interference.

Redd dewatering and spawning interference are adequately mitigated for fall chinook at this time in Hells Canyon with the incorporation of the fall chinook program into project operations. Although fall chinook are the primary species of interest in this reach due to their status as an Endangered Species, they are not the only native or listed species spawning in Hells Canyon. No analysis of ramping effects or mitigation thereof has been done for spring spawners such as rainbow/steelhead. These fish may also use the reach for spawning to some extent.

The impacts of project ramping to aquatic macroinvertebrates and as a potential cause of increased predation on native fishes are unknown at this time and should also be investigated. The potential effects associated with ramping at HC Project of most concern are stranding of newly emerged fry and rearing juveniles and juvenile emigration from rearing habitat in the reach caused by rapid and repeated flow fluctuations.

Stranding

Hunter (1992) identified the following factors that influence the stranding potential of a system:

Life history stage – stranding potential generally decreases with age and size. Fry are the most vulnerable since they are poor swimmers and generally associated with river/stream margins. Habitat conditions in these sites are affected most by stage changes.

Relevance to HC Project: -- fall chinook typically migrate to the ocean during their first year at between 70-90 mm usually after 3-6 months of freshwater rearing

(Meehan and Bjornn, 1991). In the Snake River, chinook fry emerge in April and are present through June. In addition to being weak swimmers, these fish inhabit the margin areas most affected by ramping operations.

River channel configuration – a channel with many side channels, potholes and low gradient bars has a higher stranding potential than a channel with steep banks.

Relevance to HC Project -- the constrained nature of the channel below HC dam limits the stranding potential to side channels in specific areas (example; Sturgeon Rock/Pine Bar area). Few potholes or ledges occur within the reach.

Substrate type – stranding potential is higher in channels with cobble substrate than gravel channels. In cobble systems fry, especially steelhead, tend to be more stationary, do not move as readily when flows changed and hence are more susceptible to entrapment.

Relevance to HC Project -- substrate armoring may be contributing to stranding potential in the reach since substrate in the Hells Canyon reach has likely coarsened over time due to the entrapment of sediment within the HC Project (O'Connor (2002), Vincent and Andrews (2002), Wilcock et al. (2002).

Species – generally chinook and steelhead are considered more susceptible to stranding due to their longer freshwater residence times compared to other species.

Relevance to HC Project -- fall chinook and to a lesser degree steelhead are the anadromous species most likely to be present in the Hells Canyon reach during periods when project peaking occurs.

Ramping range – the more rapid the total drop, the greater the potential for stranding.

Relevance to HC Project -- Other than during the fall chinook spawning program, HC Project is ramped daily at rates up to one foot per hour with fluctuation ranging up to over 6 feet during ramping events (see Tables 3 and 4, pages 48 and 49 respectively). This ramping rate is far in excess of rates recommended for rivers in Washington containing anadromous fish (see Table 2, page 45).

Critical flow – identified as the minimum operating discharge, or the upper end of a flow range where restrictions are implemented.

Relevance to HC Project - no critical flow has been established below HC dam even though stranding potential has been identified by researchers in specific areas (i.e. Sturgeon Rock/Pine Bar area).

Frequency of flow reductions – repeated flow fluctuations have a cumulative negative effect on a population.

Relevance to HC Project - since HC Project is managed as a peaking project, the Snake River downstream of HC dam is often subjected to daily ramping events.

Ramping Rate – the faster the ramping rate, the higher likelihood that stranding will occur.

Relevance to HC Project -- other than during the fall chinook spawning program, HC Project is ramped daily at the rate of one foot per hour with fluctuation typically ranging from 3-4 feet during ramping events. This ramping rate is far in excess of rates recommended for rivers in Washington containing anadromous fish (See Table 2, below).

To mitigate for the effects of project ramping on anadromous fish, the State of Washington (Hunter, 1992) developed a set of ramping rate recommendations for rivers. These Washington Department of Fish and Wildlife (WDFW) recommended ramping rates are shown in the following table.

Table 2. State of Washington Permanent Ramping Rates for Rivers Containing Anadromous Fish.

Season	Daylight Rates (3)	Night Rates
February 16 to June 15 (1)	No Ramping	2 inches/hour
June 16 to October 31 (2)	1 inch/hour	1 inch/hour
November 1 to February 15	2 inches/hour	2 inches/hour

(1) salmon fry are present

(2) steelhead fry are present

(3) daylight is defined as one hour before sunrise to one hour after sunset

Time of Year – related to size and age of fish species of interest. Chinook emerge during late winter and early spring while steelhead emerge in late spring through late summer.

Relevance to HC Project -- the Applicant proposes a ramping rate of 1 foot per hour with no daily limits in the spring when chinook fry (the most sensitive life stage) and parr are present in the river.

Time of Day – due to their lessened dependence on cover at night, chinook fry are considered more vulnerable during the day. Steelhead, which feed more actively at night are considered less vulnerable during the daylight hours.

Relevance to HC Project -- both species are present below HC dam.

Duration of stranding – the longer fish are trapped the greater potential for mortality either through direct desiccation, predation, temperature shock, oxygen depletion or reduced fitness.

Relevance to HC Project -- repeated daily ramping as practiced at HC Project can have a cumulative effect on fish populations.

Flow stability prior to drop in flow – one hypothesis identified for this effect was that fry accustomed to stable flow regimes along margins were ill prepared for severe changes that occurred when ramping was resumed in these habitats (Hunter 1992).

Relevance to HC Project -- this may have some applicability to HC Project. Fish accustomed to the stable conditions associated with the fall chinook program would be very vulnerable to the rapid ramping operation that immediately follows.

Stranding of fish in dewatered areas of rapidly receding rivers is typically one of the primary concerns when ramping rates are established in relicensings. Witty and Thompson (1977) observed stranding of both warmwater fishes and salmonids (including chinook sac fry) during the controlled flow study in the Snake River as flows below HC Project were ramped down from 27,000 cfs to 5,000 cfs over a period of four days in March. During this flow study, the maximum flow transition (ramping rate) at Johnson Bar was measured at 0.9 ft/hour. Stranding was found to be most significant on gravel bars and in side channels. Stranding of salmonids was most prevalent at flow changes from 18 kcfs to 12K cfs and 12 kcfs to 7.7 kcfs. A total of 26 salmonids and 515 total stranded fish were observed during what were described as index unit surveys.

Connor (pers. comment) noted that although stranding was not a major issue in the Hells Canyon Reach, it might be a problem in a specific side channel near Sturgeon Rock/Pine Bar. Juvenile chinook congregate at this site during April and early May. During this time, fish are susceptible to stranding during down ramp events. During his study Connor would notify the Applicant when conditions for stranding existed and they would modify operations to protect the vulnerable fish. Sturgeon Rock is located upstream of Pittsburg Landing at RM 366. This observation points to the need to establish a critical flow for the Wild and Scenic Snake River below which ramping would cease in order to protect endangered chinook salmon. No such critical flow has been proposed in the FLA.

Effects of Ramping on Juvenile Rearing/Emigration

It is 102 river miles from Hells Canyon Dam to Asotin, Washington. Due to the significant flow and sediment source it represents, the Salmon River confluence is often used as a reach break for studies on fish populations in the Snake River. The Salmon confluence is approximately 60 miles downstream from Hells Canyon Dam. Groves (2001) states that most (up to 70%) of the chinook spawning in the Snake has occurred upstream of the Salmon River since 1994. Conversely, Chandler et al. (2001) concluded that most of the rearing habitat for fall chinook in the Snake was located downstream of the Salmon River confluence (20.6% of the total reach area compared to 4.5% of the total reach area upstream of the confluence).

It should be noted, however, that this difference is offset somewhat by the greater length of the upstream reach. Chandler et al. (2001) also noted that relative fragmentation of rearing habitat decreases progressively downstream from HCD. Spatial distribution of rearing habitat was evaluated by estimating the size and number of patches/mile, the distance between habitat patches (downstream since this is the direction fish would migrate) and the distance between spawning sites and the nearest rearing area. For modeling purposes, Chandler et al. (2001) identified suitable chinook rearing habitat as having water depths less than 1.5 meters, substrate sizes from sand to cobble, shoreline gradients less than 40% and mean column velocities less than 0.4 m/s. These habitat attributes are most commonly found along the river margins and are classified in the report at bars and fans. These streamside margin areas are the types of habitats most affected by load following operations/ramping.

Rearing habitat upstream of the Salmon may be relatively more important than that downstream due to the concentration of spawning in that reach. It is also more fragmented and more subject to ramping induced quality shifts due to a lack of significant attenuation effects.

Flow fluctuations have been shown to induce emigration in juvenile chinook (McPhee and Brusven, 1976). This effect may result in underutilization of rearing habitat in upstream areas and overcrowding in downstream habitats where the effect is less severe (Hunter, 1992). Connor (pers. comment, 2003) noted this downstream movement phenomena among juvenile fall chinook in the Hells Canyon reach during ramping events.

Table 3 contains a summary of ramping related flow fluctuations that have occurred during the spring (the time period when fall chinook fry are in the river) over the past decade.

IPC Instream Flow study

The FLA evaluates only two potential operating scenarios for the HC Project: Run of River Full Pool (RRFP) and Proposed Operations (load following except during the fall chinook flow program). The Applicant modeled Minimum Daily Weighted Usable Area (WUA), Maximum Daily WUA and also used a flow duration curve to compare the alternatives. According to the Applicant Minimum and Maximum DWUA represented “worst case” and “best case” available habitat scenarios respectively for load following operations relative to the RRFP operational scenario. The flow duration curves developed by the Applicant were used to quantify differences between the Applicant’s Proposed Operations and RRFP and illustrate the frequency of habitat changes related to operations at HC Project.

Simply adding up areas under and over the RRFP curve tends to mask the effects of daily ramping as proposed by the Applicant on habitat quality in juvenile chinook salmon rearing areas. As shown in Table 3, during the spring when chinook fry and parr are present in the reach, stage change associated with ramping at HC Project averaged 2.6

feet per day at the Hells Canyon gauge over the last three years and 1.6 feet per day over the last 11 years. In addition, daily stage change at the gauge exceeded 3 feet per day 44 % of the days during the POR in the last 3 years and 21% of the POR in the last 11 years. Yet, in Chandler (2001) the Applicant concluded that there was no difference between load following and RRFP at extremely low and low flows and that habitat in margin areas actually increased with load following an average of between 19.6% and 44.7% during medium, high and extreme high flow years. It is the USDA Forest Service contention that the adverse effects of daily ramping in margin habitats used extensively by juvenile chinook to the extent observed in the Snake River downstream of HC Project is underestimated in the Applicant analysis and needs further study.

Flow Attenuation

The Applicant proposes to measure ramping compliance at Johnson Bar, 17 miles downstream of Hells Canyon Dam. The USDA Forest Service contends that measuring compliance at this location will severely underestimate the effects of ramping on the aquatic resources immediately downstream of the project due to flow attenuation. Attenuation is the reduction in ramping effect with distance downstream from the powerhouse. The degree of attenuation is a function of the magnitude of the ramping, the morphology of the channel and the amount of inflow from other tributaries. In general, the greater the fluctuation the farther downstream the effect is observable. In addition, rivers with confined, bedrock channels lacking significant inflow from tributaries experience little or no attenuation (Hunter, 1992). This results in the effects of project ramping being observed for relatively great distances downstream from the project. Based on gauge readings ramping had decreased only from 0.85 ft/2000 cfs immediately below HC dam to 0.7 ft/2000 cfs 18 miles downstream at Johnson’s Bar. Lag time between the two stations was approximately 7 hours.

Koski (1974) evaluated stage change at three sites during a phased ramp down at HC Project from 27,000 cfs to 5,000 cfs over a period of four days. Based on his measurements, stage change at Johnson Bar varied between 65% - 76% of that at the HC dam gauge with more change at the higher flows. Stage change at the Anatone gauge 80 miles downstream from HC dam varied from 41% - 52% of the HC dam readings.

Table 3. Summary of Hells Canyon Gauge Stage Change Data for Period of Record (POR) June 1 through Sept 21 (High Recreation Use Period)

	2003*	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Avg.Daily Stage Change (ft.)	2.4	3	2.4	3.2	2.2	2.1	1.4	3.6	3.2	3.2	2.8
Max. Daily Stage Change (ft.)	4.8	6	5.8	7.3	4.5	4.2	6.4	7.4	6.6	6.6	6.1
% POR Daily Stage Change>1ft	84	86	70	96	79	80	43	78	84	84	80

% POR Daily Stage Change>2ft	58	60	52	88	62	53	30	70	72	72	67
% POR Daily Stage Change>3ft	40	58	34	67	25	28	17	63	65	65	54
% POR Daily Stage Change>4ft	16	27	18	18	5	2	4	47	42	42	28

* POR for 2003: June 1 through July 21

Table 4. Summary of Hells Canyon Gauge Stage Change Data for POR April 1 through June 30 (fall chinook fry and parr present)

	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Avg Daily Daily Stage Change(ft)	2.4	2.7	2.8	1.2	0.8	0.8	0.8	1.9	1.4	1.4	1.7
Max Daily Daily Stage Change(ft)	4.8	5.9	5.7	8.1	7.7	4.5	3.5	9.4	5.1	5.1	5.2
% POR Daily Stage Change>1ft	80	80	80	70	44	37	35	58	57	57	64
% POR Daily Stage Change>2ft	62	62	65	46	14	9	10	38	24	24	35
% POR Daily Stage Change>3ft	34	49	49	25	4	2	1	25	12	12	15
% POR Daily Stage Change>4ft	12	24	22	4	3	1	0	13	4	4	5

In summation, it is important that FERC review and analyze aspects of ramping impacts on anadromous fish in the Hells Canyon Reach. This is a complex issue and the USDA Forest Service has made an ASR for ramping (ASR submitted 9-17-2003, Page 12-15). The USDA Forest Service also made an AIR in response to the DLA to the Applicant (1-10-2003 page 49).

FERC Issue: The effect of flow diversion and Idaho Power's proposed 100-cfs minimum flow on aquatic resources in the Oxbow Bypass.

The FLA indicates that the Applicant does not plan to provide the flow through the Oxbow Bypass channel sufficient to improve water quality to meet state standards. The fact that bull trout, an ESA list species, is documented to use the channel makes it necessary to improve water quality. FERC needs to analyze all of the possible scenarios that can improve water quality in the Oxbow Bypass channel to improve native fish habitat. The Oxbow Bypass is the staging area for migrating bull trout that use Pine Creek and Indian Creek (Chandler 2003).

FERC Issue: The effects of Idaho Power's proposed Native Salmonid Plan on fisheries for redband trout in tributaries to the Hells Canyon and Oxbow reservoirs.

The plan needs to be thoroughly examined for its scope and funding. The area above Brownlee Dam is excluded from the plan even though the project eliminates connectivity between the streams tributary to Brownlee Reservoir and the mainstem downstream. The exclusion of these streams needs to be fully analyzed and justified. The redband rainbow trout populations in tributaries of Brownlee Reservoir including Powder River and Eagle Creek, as well as those populations in the Weiser River, which enters the Snake River ten miles above Brownlee Reservoir, are also adversely affected by the project. There should be mitigation included in the Native Salmonid Plan for the continued loss of redband trout production in the streams tributary to Brownlee Reservoir. In addition, the Applicant continually cites the poor quality of habitat upstream of the project as a justification for their not proposing fish passage at the project. A mitigation fund to help restore degraded habitat commensurate with habitat interdicted or otherwise affected by HC Project is a necessary prerequisite of a long range passage restoration objective.

FERC Issue: The effectiveness of Idaho Power's White Sturgeon Conservation Plan for maintaining and enhancing sturgeon fisheries affected by Idaho Power's Snake River project.

USDA Forest Service contends that the White Sturgeon Conservation Plan is supported by excellent science but lacks the necessary political agreements needed for implementation. FERC should evaluate the plan to determine whether it has a reasonable expectation of being implemented. Additionally, FERC should analyze the adequacy of funding proposed to implement the plan. Any impediments to implementing the plan should be identified and avenues to accomplish implementation recommended.

FERC Issue: The effects of Brownlee Reservoir levels on centrarchid fish spawning and on recreational fisheries for crappie, smallmouth bass, and channel catfish.

USDA Forest Service agrees that the proposal as presented will provide warmwater fish with sufficient reproduction to meet angler demand. However, the impact on native fish within the Wild and Scenic Snake River downstream of the project by warmwater fish entrained through the HC Project should be examined in depth. This should include an assessment of the impact of these entrained warmwater species on native ESA listed species.

USDA Forest Service Aquatic Resources Issues Not Identified

The FERC DEIS should address:

1. Improvement of habitat in the Hells Canyon Reservoir to provide a viable and fishable population of white sturgeon.
2. The placement of marine-derived nutrients in all former anadromous fish inhabited tributaries connected to the reservoirs of the HC Project.

3. The reintroduction of the Pacific lamprey (anadromous fish) into streams above Hells Canyon Dam.
4. The entrainment of warmwater fish from the HC Project to the Wild and Scenic Snake River.

Terrestrial Resources

FERC Issue: *The effects of reservoir fluctuations on the quantity, quality, and interconnectedness of riparian habitats around Hells Canyon, Oxbow, and Brownlee reservoirs and on wildlife associated with these habitats.*

The issue should be expanded to include continued HC Project effects to the areas affected by HC reservoirs, not just the fluctuation zone.

FERC Issue: *The loss of waterfowl brooding habitat caused by reservoir fluctuations and seasonal drafting of Brownlee reservoir, and the effectiveness of cooperative enhancement projects at Gold, Huffman, Patch and Porter islands in mitigating for this loss.*

The issue should be expanded to include the continued loss of island habitats affected by HC Project reservoirs over the new license term.

FERC Issue: *The effects of flow fluctuations caused by load following on riparian habitat downstream of Hells Canyon dam, and the potential effects of reducing ramping rates or increasing minimum flows.*

The USDA Forest Service agrees with the FERC issue as proposed. Reference the agency riparian habitat discussion in Section 4.1.3 Proposed PM&E measures, #14.

FERC Issue: *The effects of reservoir-related mortality and loss of low-elevation winter range on mule deer, and the effectiveness of acquiring and managing additional land to mitigate for reduced habitat capability.*

The second half of this issue can be deleted as FERC identifies the issue below (land acquisition and management). The issue should specifically address the continued HC Project effects to low-elevation winter range affected by HC and Oxbow reservoirs.

FERC Issue: *The effects of reservoir fluctuations, roads and recreational activities on low-elevation riparian habitat for mountain quail, and the potential benefits of projects to support mountain quail recovery.*

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: *The effects of livestock grazing on wildlife habitat and the potential benefits of grazing management.*

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: *The effects of disturbance caused by project-related maintenance, road use, land management, and recreational activities on wildlife, including bats, big game, Neotropical songbirds, and colonial waterbird rookeries, in particular.*

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: *The potential for raptor electrocution and collision associated with the Pine Creek-Hells Canyon transmission line, and the potential benefits of Idaho Power's proposed transmission line operation and maintenance plan.*

The issue should be expanded to include the other 12 transmission lines the Applicant identified in its DLA and eliminated in the FLA. Until FERC notices and approves that these lines are no longer a primary transmission system for the HC Project, these lines must be analyzed as part of the application for the new license.

FERC Issue: *The effects of chemical contaminant accumulations in Brownlee reservoir on amphibians and fish-eating wildlife species.*

The issue should evaluate how the three-reservoir complex affects the accumulation and production on methyl-mercury in the water column and determine how methyl-mercury production accumulates in fish tissue, and is passed up and through the food web.

FERC Issue: *The effectiveness of Idaho Power's proposal to provide mitigation for the effects of ongoing project operations by: (1) managing wildlife resources on Applicant-owned lands; (2) acquiring and enhancing 23,582 acres of additional land in the vicinity of the Hells Canyon Project; and (3) implementing cooperative projects with other entities.*

The USDA Forest Service agrees with the FERC issue as proposed. Reference the agency upland and riparian habitat discussion in Section 4.1.3 Proposed PM&E measures, #14.

FERC Issue: *The distribution between Idaho and Oregon of land that Idaho Power acquires as mitigation for ongoing project operations.*

The USDA Forest Service suggests FERC consider the federal government and non-governmental organizations as potential administrators of lands acquired for the purpose of mitigation of project operations.

FERC Issue: *The effects of shoreline erosion caused by reservoir fluctuations and recreational activity on riparian vegetation around Hells Canyon, Oxbow and Brownlee reservoirs.*

The issue needs to be expanded to provide a prediction of current and future erosion rates from the slopes of the reservoirs under operational scenarios considered in the DEIS. This display should build on the information provided in Technical Report 3.2-42 on Shoreline Erosion. Additionally, the issue must be integrated with the Recreation FERC Issue: *The effectiveness of the shoreline management plan in improving management of in-water development and shoreline erosion on the Hells Canyon Project reservoirs.*

FERC Issue: The effects of flow fluctuations caused by load following on the extent and composition of riparian plant communities downstream of Hells Canyon dam, and the potential effects of reducing ramping rates or increasing minimum flows on these plant communities.

The USDA Forest Service agrees with the FERC issue as proposed. Reference the agency riparian habitat discussion in Section 4.1.3 Proposed PM&E measures, #14. The issue should specifically include the re-analysis of the HC_REM model using a 6-hour time step and mean daily water level rather than peak weekly time-step and a mean annual water level. Refer to the Applicant's Technical Report E.3.3-3 and USFS-3 study request, FERC # 120. Additionally, this issue should include the effects of flow fluctuations on erosion of sand, silt and clay sediments required for riparian plant communities in the fluctuation zone.

FERC Issue: The effects of reservoir fluctuations at Hells Canyon, Oxbow, and Brownlee reservoirs and flow fluctuations of Hells Canyon dam on noxious weed establishment, distribution and abundance.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effects of project-related maintenance, road use, land management, recreational activity, and other potential soil or vegetation disturbances on the establishment, distribution, and abundance of noxious weeds.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effectiveness of Idaho Power's proposed cooperative weed management measures in controlling the establishment, distribution and abundance of noxious weeds and invasive exotic plants.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effects of reservoir fluctuations at Hells Canyon, Oxbow and Brownlee reservoirs and flow fluctuations downstream of Hells Canyon dam on rare plant populations.

The issue should be expanded to include continued HC Project effects to the areas affected by HC reservoirs, not just the fluctuation zone.

FERC Issue: *The effects of project-related maintenance, road use, land management, recreational activity, and other potential soil or vegetation disturbances on rare plant populations.*

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: *The effectiveness of Idaho Power's proposals to protect and monitor rare plant sites.*

The USDA Forest Service agrees with the FERC issue as proposed.

USDA Forest Service Terrestrial Resource Issues Not Identified

The FERC DEIS should address:

1. The need for an analysis of the effects of the Applicant's 13-transmission lines on riparian, wetland and upland habitats; culturally significant plants; right-of-way vegetation management; erosion control; travel and access needs; exotic and invasive vegetation; T&E and Regional Forester sensitive plants and animals; and cultural and aesthetic resources.
2. The need to include an analysis of fine sediment erosion downstream of Hells Canyon dam as part of its analysis of flow fluctuations on riparian plant communities. See above.
3. FERC should include analysis of continued project effects to the loss of the anadromous fish link in the wildlife food chain.

Threatened and Endangered Species

FERC Issue: *The effects of Idaho Power's Snake River projects on Endangered Species Act (ESA)-listed populations of anadromous fish and bull trout, and the potential effects of restoring fish passage.*

The USDA Forest Service maintains that FERC should analyze fish habitat requirements downstream of the HC Project. The following areas should be addressed:

- Assess the effects of poor water quality in the Hells Canyon Reach, which is caused by the HC Project, does not meet State standards, and will continue to adversely affect fall chinook salmon (temperature, low DO, and elevated TDG).
- Identify the effects of ramping alternatives on juvenile fall chinook salmon in the Hells Canyon Reach (including stranding).
- Assess the continued trapping of sediment/gravel by the HC Project that reduces rearing habitat for fall chinook salmon juveniles.

- Identify the effects of baseline and other flow alternatives on fall chinook salmon smolt migration.
- Address the proposed ramping rates that exceed recognized standards established for rivers in the Northwest that contain anadromous fish (other Northwest hydropower projects have ramping rates typically on the order of 1-2 inches/hour) (Longview Associates 2003).
- Address the proposed ramping rates that exceed recognized standards established for rivers in the Northwest that contain bull trout (other Northwest hydropower projects have ramping rates typically on the order of 1-2 inches/hour) (Longview Associates 2003).

The USDA Forest Service maintains that additional studies are needed before these effects can be accurately determined. (See USDA Forest Service Additional Study Requests submitted to FERC on 9-17-2003, pages 12-15.)

FERC Issue: The effects of any project-related erosion of beaches and terraces on fall chinook rearing habitat downstream of Hells Canyon Dam.

The USDA Forest Service agrees with the FERC issue as proposed. FERC should analyze methods to 1) determine the cause of project-related erosion of beaches and terraces, 2) minimize or prevent adverse effects of project operation on sandbars, terraces aquatic habitats, and riparian ecosystem, 3) monitor beach and terrace erosion, and 4) mitigate for continued loss of beaches and terraces attributed to the project. The USDA Forest Service maintains that additional studies are needed before these effects can be accurately determined. (The USDA Forest Service submitted additional information requests to the Applicant in response to the DLA, 1-10-2003, page 49, and on 9-17-2003 submitted additional study requests to FERC 9-17-2003, page 12.)

FERC Issue: The effects of river flows on fall chinook spawning and incubation downstream of Hells Canyon Dam, including the operating restrictions proposed in Idaho Power's Fall Chinook Plan.

The USDA Forest Service agrees with the FERC issue as proposed.

Issue: The effects of any project-related reduction in the availability of gravels and cobble on fall chinook spawning downstream of Hells Canyon Dam.

The USDA Forest Service agrees with the FERC issue as proposed. FERC should analyze the effects of project structures and operations on sediment supply and transport as it affects spawning gravel availability downstream of HC dam. Studies have shown that HC Project is responsible for reduction of sediment supplies below HC dam, and that this has adverse resource effects. Coarsening of the streambed below HC dam is an important fisheries management issue. The USDA Forest Service maintains that additional studies are needed before these effects can be accurately determined. (The USDA Forest Service submitted additional information requests to the Applicant in

response to the DLA, 1-10-2003, page 48, and on 9-17-2003 submitted additional study requests to FERC 9-17-2003, page 20.)

FERC Issue: The effects of delayed cooling in the fall and delayed warming in the spring on fall chinook rearing, fall chinook spawning, and migratory life stages on Snake River fall chinook, spring chinook, sockeye, and steelhead.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effects of low DO concentrations in the late summer and early fall on adult migration, spawning and incubation of Snake River fall chinook salmon and adult migration and holding of Snake river steelhead.

The USDA Forest Service agrees with the FERC issue as proposed. Low DO below HC dam needs to be analyzed for its effect on fall chinook salmon and other native fish. It is known that low DO extends for at least seven miles below HC dam during late summer. This may affect spawning, growth and habitat utilization by fish species using that reach of the river. The USDA Forest Service maintains that additional studies are needed before these effects can be accurately determined. (USDA Forest Service submitted additional information requests to the Applicant in response to the DLA, 1-10-2003, page 92, and on 9-17-2003 submitted additional study requests to FERC 9-17-2003, page 22 and 42.)

FERC Issue: The effects of gas supersaturation on rearing Snake River fall chinook and outmigrating juvenile Snake River fall chinook, spring chinook, sockeye and steelhead.

The USDA Forest Service agrees with the FERC issue as proposed. Elevated TDG is known to be detrimental to juvenile salmon and other native salmonids. FERC should analyze the duration, levels and exposure of outmigrant juvenile salmon to project induced TDG. Mitigation measures proposed by the Applicant should be analyzed for effectiveness. The USDA Forest Service maintains that additional studies are needed before these effects can be accurately determined. (USDA Forest Service submitted additional information requests to the Applicant in response to the DLA, 1-10-2003, page 92, and on 9-17-2003 submitted additional study requests to FERC 9-17-2003, page 22 and 42.)

FERC Issue: The potential effects of providing flow augmentation water from Brownlee Reservoir, or other measures, to improve the survival of smolts migrating through the lower Snake and Columbia rivers.

The USDA Forest Service agrees with the FERC issue as proposed. FERC should identify the effect of baseline and other flow alternatives on fall chinook salmon smolt migration. (The USDA Forest Service submitted on 9-17-2003 additional study requests pages 10.) The USDA Forest Service in its response to DLA proposed PM&E measures stated that “the effect of flow augmentation on fall chinook smolt migration needs to be analyzed” (Page 119, comment 5).

FERC Issue: The potential for installing a selective withdrawal facility, or for using operational measures to improve water temperatures for rearing fall chinook and for the outmigration of fall chinook, spring chinook, sockeye, and steelhead.

The USDA Forest Service agrees with the FERC issue as proposed. The shift in thermal regime in the river below HC dam caused by project operations may affect the timing of fall chinook spawning and emergence. Modification of facilities at Brownlee dam should be analyzed to determine whether structural changes at the dam would alter water quality, specifically temperature and DO. The USDA Forest Service contends that additional studies are needed before these effects can be accurately determined. USDA Forest Service submitted additional information requests to the Applicant in response to the DLA, 1-10-2003, page 92, and on 9-17-2003 submitted additional study requests to FERC 9-17-2003, page 23 and 42.)

FERC Issue: The effects of Idaho Power's hatchery operations (including straying) on ESA listed stocks of anadromous fish in the Snake River Basin and in the lower Columbia River Basin, including the Deschutes River.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The potential effects of Idaho Power's proposed Native Salmonid Plan on populations of bull trout in tributaries to the Hells Canyon and Oxbow reservoirs.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effects of operating the Hells Canyon fish trap on adult salmon and steelhead from ESA-listed stocks.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The potential effects of project operations on the Bliss Rapids snail and the Idaho spring snail.

The USDA Forest Service agrees with the FERC issue as proposed. To date the Applicant has not made a reasonable effort to identify populations of listed snails in waters affected by the HC Project.

FERC Issue: The effects of habitat loss and fragmentation due to reservoir fluctuations at Hells Canyon, Oxbow and Brownlee reservoirs and load following downstream of Hells Canyon dam on the bald eagle, gray wolf, Canada lynx, Idaho ground squirrel, yellow-billed cuckoo, and Columbia spotted frog.

The issue should be expanded to include continued HC Project effects to the areas affected by HC reservoirs, not just the fluctuation zone.

FERC Issue: *The effects of disturbance caused by project-related maintenance, road use, land management, and recreational activities on the bald eagle*, gray wolf, Canada lynx, Idaho ground squirrel, yellow-billed cuckoo, and Columbia spotted frog.*

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: *The potential for bald eagle electrocution or collision associated with the Pine Creek-Hells Canyon transmission line, and the effectiveness of Idaho Power's proposed transmission line operation and maintenance plan in protecting this species.*

The issue should be expanded to include the other 12 transmission lines the Applicant identified in its DLA and eliminated in the FLA. Until FERC determines and notices that these lines are no longer a primary transmission system for the HC Project, these lines must be analyzed as part of the application for the new license.

FERC Issue: *The effects of reservoir operations, flow regime, and disturbance on habitat that could support Ute ladies'-tresses and MacFarlane's four-o'clock.*

The issue should include continued HC Project effects to the areas affected by HC reservoirs. It should also include the river reach downstream of HC dam.

USDA Forest Service Threatened and Endangered Species Issues Not Identified

The FERC DEIS should address:

1. The effects of ramping flows on bull trout habitat within the Hells Canyon reach. The Hells Canyon reach provides major wintering and rearing habitat for fluvial bull trout. Studies concerning the impact of ramping on fluvial bull trout using this reach have used models based on fewer than two dozen sampled fish (Chandler 2003).
2. The population size of fluvial bull trout using the Hells Canyon reach that would be available for migration over Hells Canyon and Oxbow dams as proposed in the Native Salmonid Plan. The Native Salmonid Plan proposed by the Applicant provides for one-way transport of fluvial bull trout upstream to reservoirs and tributaries above Hells Canyon and Oxbow dams. The effect on the population of fluvial bull trout below Hells Canyon Dam should be analyzed before ESA listed fish are moved upstream as proposed by the plan.
3. The potential for connecting populations of bull trout in the upper Weiser River to the HC Project and the Wild and Scenic Snake River. The potential for reconnecting upper Weiser River bull trout to the Snake River population was not addressed by the Applicant even though the project interdicts the connectivity of these two populations. The Weiser River has a series of small irrigation diversion barriers that could be laddered or otherwise modified to provide bull trout passage. The Applicant has excluded Brownlee Reservoir and the Weiser River

from its Native Salmonid Plan. A full analysis of the potential to recover bull trout in the Weiser River and the reconnection to the fluvial population below Hells Canyon Dam is needed. This seems particularly appropriate since the Applicant has included passage over Hells Canyon and Oxbow reservoirs in the Native Salmonid Plan.

Heritage Resources

FERC Issue: The effects of project operation and enhancements on historical and archaeological sites, Native American rock art, traditional cultural properties, and historic buildings and structures.

FERC Issue: Identification and development of measures to resolve adverse effects on historic properties, and other potential National Register-eligible cultural resources within the Project's area of potential effects, pursuant to Section 106 of the National Historic Preservation Act.

The USDA Forest Service contends that a critical issue missing in SD 1 is a clear definition of the APE for the project. While the USDA Forest Service agrees with FERC regarding effects determinations and mitigations, without agreement on the full area potentially affected by project operations, FERC cannot address the other two issues as defined above.

Additionally, FERC has not addressed the applicant's lack of commitment regarding a complete inventory of the APE, full and completed evaluation of historic properties for their eligibility to the National Register, and full and complete determinations of the effect of operational regimes proposed in the FLA or effects to these resources arising under current operations.

USDA Forest Service Heritage Issues Not Identified

The FERC DEIS should address:

1. The effects of future erosion of beaches and terraces in Hells Canyon on historical and archaeological sites.

Recreation -- Reservoir Recreation

FERC Issue: The effectiveness of the proposed recreational site improvements and additional O&M funding in improving public access to recreational resources within the project boundary and in protecting cultural and natural resources at these sites, including those sites that are owned by the Applicant, BLM, USFS, and other state and county agencies.

This issue should include an analysis of the extent and adequacy of the improvements being proposed by the Applicant and whether additional measures are needed to

effectively mitigate for project impacts and address opportunities as required by 18 CFR 2.7. The RARWG identified numerous potential PM&E measures (to mitigate for project impacts) that were not proposed by the Applicant in the FLA.

FERC Issue: The effects of recreational facility measures and the proposed 10-vertical-foot operating range in Hells Canyon reservoir under certain load conditions on recreation activities, including boat launching, boat stranding, and bank access within the project boundary.

This issue should also include consideration of the frequency, magnitude and time of year of the proposed operating changes. Potential impacts of the level changes on recreation should build on information provided in Technical Report E.5-6 “Reservoir Level Issues in the Hells Canyon Complex.”

FERC issue: The effect of proposed project operations on boating opportunities downstream of the Hells Canyon Dam.

The issue should be expanded to include the effect of proposed project operations on recreation opportunities, including motorized and non-motorized boating, downstream of Hells Canyon Dam.

FERC Issue: The effectiveness of the flow dissemination system in improving information about river flows for recreational users downstream of Hells Canyon dam.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effectiveness of the shoreline management plan in improving management of in-water development and shoreline erosion on the Hells Canyon Project reservoirs.

The issue needs to be expanded to provide a prediction of current and future erosion rates from the slopes of the reservoirs. This should build on the information provided in Technical Report 3.2-42 on Shoreline Erosion. This issue should include the effects of the shoreline management plan on current and future recreational opportunities and on other resources including aesthetics and cultural resources. Additionally, the issue must be integrated with the Terrestrial FERC Issue: *The effects of shoreline erosion caused by reservoir fluctuations and recreational activity on riparian vegetation around Hells Canyon, Oxbow and Brownlee reservoirs.*

FERC Issue: The effectiveness of the proposed RAMP in identifying and responding to changing recreational needs, increased recreational demand, needs for recreational facility upkeep, and law enforcement requirements over the life of the license.

This issue should be expanded to consider the adequacy of the specific description of the proposed RAMP in the FLA. Does the description provide sufficient detail, particularly in regards to decision making roles and authorities and on future Applicant financial

obligations, for FERC and the agencies to be able to adequately assess potential effects on agency lands?

Potential questions related to the lack of detail in the RAMP measure include:

- What are the specific roles and authorities of the agencies and entities that the Applicant will be consulting with?
- Who will be the final deciding authority in determining what, where, when and how much money to spend on future recreation developments?
- What will the RAMP amount be based on? Does the information in the FLA support the Applicant's proposal to set a capital cost limit of \$300,000 every sixth year of the new license?
- Can the effects of the RAMP proposal be adequately assessed when the description has these two potentially incompatible statements: 1) the Applicant will fund "all reasonable and agreed-upon construction and O&M associated with this measure" and 2) the Applicant proposes a "capital cost limit every sixth year (from year 9 through year 27) of the new license period: \$300,000."

FERC Issue: The effectiveness of the proposed litter and sanitation program in maintaining the quality of recreational experiences and natural resources at dispersed recreational sites in the project area.

This issue should consider the effectiveness of the proposal over the license term, particularly as regards health and safety, ADA accessibility standards, quality of recreation experience and protection of natural resources.

FERC Issue: The effectiveness of the proposed public safety programs, including financial assistance to Adams County and coordination of law enforcement resources between agencies, in maintaining a safe recreational environment in the project area.

This issue should include whether the extent of the proposal is adequate for law enforcement needs in the Hells Canyon area, and what financial responsibility the Applicant should have in meeting law enforcement needs. Are additional law enforcement officers, patrol boats, and operating equipment needed now?

FERC Issue: The effects of the proposed road maintenance program on the protection of cultural and natural resource sites adjacent to the roads, visitor safety, and recreational access to the project.

This issue should be expanded to consider the adequacy of the proposal as regards road management elements as well as road maintenance concerns. A comprehensive road management strategy for project related roads should consider necessary road design, construction and signing standards for public safety. It should also include travel and access management considerations, seasonal or year round road closure needs, and future roading needs.

FERC Issue: The effects of the proposed additional boat moorage in Hells Canyon Project reservoirs on angling access to project waters.

In order to adequately assess this issue and the impacts that may occur on NFS lands, specific information is needed as to where these boat moorage proposals are located. This issue should consider the effects on other recreation opportunities including boating, dispersed recreation, and other water based and on-shore activities, not just angling access. See response to PM&E measure # 47 for additional information.

FERC Issue: The effects of the proposed I&E Plan on protecting and preserving cultural, natural, and historical resources in the project area from inappropriate recreational activities.

This issue should consider more than the effectiveness of the I&E Plan on protecting resources from inappropriate recreational activities. A key consideration is how well the Plan would meet public needs and expectations for information and education. Is it effective in helping recreationists discover and explore recreational opportunities and historical points of interest in the Hells Canyon area?

At this time the USDA Forest Service agrees with the other Recreation issue statements as written in Section 6.0 of SD 1

USDA Forest Service Recreation Resource Issues Not Identified

FERC should address in its DEIS the following issues that highlight the most significant river recreation issues affecting National Forest System Lands and Resources from the HC Project. The USDA Forest Service maintains that these issues are not adequately addressed or mitigated by the Applicant in the FLA.

1. Sediment Transport and Sandbar Recruitment

- a. The DEIS should analyze the effects of the Applicant's proposed operations on sediment transport through and below the project and the effects of the lack of sediment recruitment on riverine environments and recreationists' use and enjoyment of NFS lands downstream of the project.
- b. The Applicant's proposed clear water flows released from the complex do not replenish the natural sediment that is lost each year during normal spring runoff periods. In the last license period, the lack of sediment recruitment has changed the riverine environment. This change has had a direct effect on recreationists' use and enjoyment of NFS lands downstream of the project. Float boat recreation users have reported a preference for sandy beaches for ease of access. Additionally, these areas provide the preferred access and mooring locations for power boaters. The USDA Forest Service contends that the Applicant has failed to propose PM&E measures responding to this project induced impact.

2. Flow Regimes for Navigation and River Recreation Satisfaction

- a. The DEIS should analyze the effects of the Applicant's proposed flows on river recreation, safety and user satisfaction including but not limited to the effects of proposed hourly and daily fluctuations, ramping rates, and minimum flows.
- b. The USDA Forest Service contends that the Applicant has failed to propose PM&E measures to address the impacts to downstream recreation users. Preferences related to this matter have been documented in studies done by Bayha and Koski in 1973, and Shelby et.al. in 2002. These studies indicate that float and power boaters tend to prefer a minimum flow that is between 8,000-12,000 cfs. This flow range appears to meet the technical and challenge preferences that each group seeks in relation to their river experience.
- c. Additionally, visitors and recreationists to the Snake River have indicated that daily changes in flow regimes interfere with their use and enjoyment of the river environment (Shelby 2002). These fluctuations can occur hourly, with a ramping rate of 1 foot per hour measured at Johnson Bar, and can greatly fluctuate throughout a 24 hour period. The Applicant's Technical Reports support the USDA Forest Service belief that this constant flow manipulation creates dissatisfaction in recreation experiences and negative impacts on boater perceptions of the river.
- d. USDA Forest Service contends that the proposed 6,500 cfs flow and any flow of lesser amount does not meet the need to the recreation experience that it is charged to provide on NFS lands, through the Hells Canyon National Recreation Area (HCNRA). The Applicant fails to consider alternative flow regimes as part of the application.

3. Hells Canyon Tailrace Area Impacts

- a. The identification and development of measures to resolve the effects of crowding and to provide adequate facilities and services at the tailrace area. The Applicant does not propose PM&E measures to mitigate for the project operations and impacts to recreationsist use of the Hells Canyon tailrace area.
- b. The Applicant has reported the popularity and increasing number of visitors that are attracted to the Hells Canyon tailrace area for fishing and boating access. The Applicant conducted survey also reported crowding was a major concern for users of this area. (Section E.5.2.2.3.2.7 of the FLA indicated that 53% of the respondents reported crowding in the Hells Canyon tailrace area). Respondents indicated that crowding appears to be a problem associated with the small site size and limited launch offerings provided by the Applicant at the tailrace area.
- c. USDA Forest Service contends that the project induces impacts to this tailrace area and that the Applicant does not mitigate for these impacts to NFS lands and

waters in its existing license application. Additional PM&E measures in this area are requested.

4. Designated Areas Affected by the Project

Congress designated this area as the Hells Canyon National Recreation Area (Public Law 94-199 (1975) to assure that the natural beauty, and historical and archeological values of the Hells Canyon Area and the 71 mile segment of the Snake River between the Hells Canyon Dam and the Oregon-Washington border, together with portions of certain of its tributaries and adjacent lands are preserved for this and future generations, and that the recreational and ecological values and public enjoyment of the area are thereby enhanced.

In addition, this act that established the HCNRA amended the Wild and Scenic Rivers Act (PL 90-542) to include the National Forest portions of the Snake River in the National Wild and Scenic Rivers System. The Act designated 71.5 miles of the Snake River as wild and scenic.

USDA Forest Service requests that the FERC acknowledge and address impacts to the two congressionally designated areas; the Hells Canyon National Recreation Area, and the Wild and Scenic Snake River that are affected by the project.

Aesthetics

FERC Issue: The effectiveness of existing measures in ensuring that project features are compatible with the visual setting.

This issue should specifically address the continued project effects caused by the Hells Canyon and Oxbow reservoir drawn down, and the effects caused by lack of sediment transport. Both of these specific issues should be considered in the cumulative effects.

FERC Issue: The effects of proposed recreational enhancement measures on aesthetic resources within the project boundary, and whether there would be any adverse effects.

The USDA Forest Service agrees with the FERC issue as proposed.

FERC Issue: The effectiveness of the proposed “consideration of aesthetic concerns” in minimizing visual effects of the existing transmission line when upgrades or repairs to the transmission line are implemented.

This issue needs to be expanded to address the ongoing operation and maintenance with regard to vegetation management within the transmission line corridors and the access roads to the towers.

USDA Forest Service Aesthetic Issues Not Identified

The FERC DEIS should address:

1. Effects to aesthetic resources should be evaluated and mitigated in the event of any additional proposals that may be required to meet resource needs, i.e. fish passage, vegetation management, sediment transport, hatchery development, etc.

Land Use

FERC Issue: The effectiveness of the proposed Hells Canyon Resource Management Plan in creating a buffer zone between incompatible uses, to establish or maintain compatibility between and among the various land and water uses in the vicinity of the Hells Canyon Project, and to provide for the protection of natural and cultural resources.

This issue should be expanded to define the scope of the buffer zones.

FERC Issue: The effects of Idaho Power's proposed change in the project boundary to exclude 3,800 acres of federal land surrounding the project reservoirs.

This issue should include a need for information from the Applicant on the specific locations of the federal lands affected by the proposed change in the project boundary. A detailed map showing the exact locations of the 3,800 acres is needed to facilitate an effects analysis. The map and text should also identify the contour elevation line that the Applicant is proposing as the new boundary. A change in the project boundary can be made by FERC, but project impacts that occur in the area excluded from the proposed boundary still need to be identified, evaluated and mitigated.

USDA Forest Service Land Use Issues Not Identified

The FERC DEIS should address:

1. With the Applicant's proposed land acquisition program and subsequent HCRMP, will these acquired lands be incorporated into the FERC project boundary?

Socioeconomics

FERC Issue: The effects of changes to current project operations on local governments, power users, and commercial enterprises.

The USDA Forest Service agrees with the FERC issue as proposed.

Development Resources

FERC Issue: The effects of potential operational changes on the project energy and capacity benefits and the funding of various PM&E measures on the cost of project power.

The USDA Forest Service agrees with the FERC issue as proposed.

Comprehensive Plans

The following is a list of the various Land and Resource Management Plans and other large scale planning documents that apply to the HC Project area and adjacent affected public lands. These plans should be considered in addition to those listed SD1, Appendix D –Relevant Comprehensive Plans. The Wallowa-Whitman National Forest submitted these plans to the Commission by cover letter dated October 21, 2003.

USDA Forest Service. 2003. Land and Resource Management Plan, Record of Decision, Summary, Final Environmental Impact Statement, Appendices, and maps. Payette National Forest. U.S. Department of Agriculture. Intermountain Region.

USDA Forest Service. 1990. Land and Resource Management Plan, Record of Decision, Summary, Final Environmental Impact Statement, Appendices, and maps. Wallowa-Whitman National Forest. U.S. Department of Agriculture. Pacific Northwest Region.

USDA Forest Service. 2003. Hells Canyon National Recreation Area Comprehensive Management Plan (Forest Plan Amendment #29), Record of Decision, Final Environmental Impact Statement, Appendices, Biological Assessment and Biological Evaluation. Wallowa-Whitman National Forest. U.S. Department of Agriculture. Pacific Northwest Region.

USDA Forest Service. 1999. Wild and Scenic Snake River Recreation Management Plan (Forest Plan Amendments 12 and 20). Wallowa-Whitman National Forest. U.S. Department of Agriculture. Pacific Northwest Region.

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USDA Forest Service. 1994. Wild and Scenic Snake River Recreation Management Plan (Forest Plan Amendment #12), Record of Decision, Final Environmental Impact Statement and Appendices. Wallowa-Whitman National Forest. U.S. Department of Agriculture. Pacific Northwest Region.

USDA Forest Service. 1992. Recommended Limits of Acceptable Change Recreation Management Plan for the Snake River – Hells Canyon National Recreation Area (Forest Plan Amendment #5), Decision Memo. Wallowa-Whitman National Forest. U.S. Department of Agriculture. Pacific Northwest Region.

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USDA Forest Service. 1992. Integrated Noxious Weed Management Plan (Forest Plan Amendment #4), Decision Notice and Environmental Assessment. Wallowa-Whitman National Forest. U.S. Department of Agriculture. Pacific Northwest Region.

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- Chandler, J.A., T. Richter and R. Wilkison. 2003. Distribution, Status, Life History, and Limiting Factors of Redband Trout and Bull Trout Associate with the Hells Canyon Complex. Technical Report Appendix E.3.1-7, Chapter 4 in the Final License Application for the Hells Canyon Project. Idaho Power Company. Boise. ID.
- Chandler, J.A., T. Richter and R. Wilkison. 2003. Physical Habitat Use and Water Quality Criteria for Redband Trout and Bull Trout Associated with the Hells Canyon Project. Technical Report Appendix E.3.1.7, Chapter 1 in the Final License Application for the Hells Canyon Project. Idaho Power Company. Boise. ID.
- Chandler J.A., S.R. Brink, S.K. Parkinson and M.G. Butler. 2001. Hells Canyon Instream flow assessment. Technical Report Appendix E.2.3.2. Technical Appendices in the Final License Application for the Hells Canyon Project. Idaho Power Company. Boise. ID
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List of Acronyms

ACOE	U.S. Army Corps of Engineers
ADA	Americans with Disabilities Act
APE	area of potential effect
CFR	Code of Federal Regulation
cfs	cubic feet per second
DEIS	draft environmental impact statement
DLA	draft license application
DO	dissolved oxygen
ESA	Endangered Species Act
FCP	Formal Consultation Package for Relicensing: Hells Canyon Complex
FEIS	final environmental impact statement
FERC	Federal Energy Regulatory Commission
FLA	final license application
FPA	Federal Power Act
FPC	Federal Power Commission
FSH	Forest Service Handbook
FSM	Forest Service Manual
HC	Hells Canyon
HCC	Hells Canyon Complex
HCNRA	Hells Canyon National Recreation Area
HCRMP	Hells Canyon Resource Management Plan

IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDFW	Idaho Fish and Wildlife
IPC	Idaho Power Company
LRMP	Land and Resource Management Plan
MOU	memorandum of understanding
NEPA	National Environmental Policy Act
NFS	National Forest System
NOAA	National Oceanic & Atmospheric Administration
O&M	operations and maintenance
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
PM&E	protection, mitigation, and enhancement
RAMP	Recreation Adaptive Management Plan
RARWG	Recreation and Aesthetics Resource Work Group
RM	river mile
RMP	Recreation Management Plan
ROW	rights-of-way
RRFP	run of river full pool
RSG	Recreation Stakeholders Group
SD 1	Scoping Document 1
SHPO	State Historic Preservation Office
TDG	total dissolved gas

T&E	threatened and endangered
TES	threatened, endangered, and sensitive
TMDL	total maximum daily load
TRWG	Terrestrial Resource Work Group
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFS	USDA Forest Service
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WUA	weighted usable area
WWNF	Wallowa-Whitman National Forest